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THE SPARROW-HAWKS (*ACCIPITER*) OF THE ANDAMAN ISLANDS¹

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(With a plate & three text-figures)

The identification of sparrow-hawks (*Accipiter*) collected in the Andaman Islands has caused problems. A study of all the specimens known from these islands revealed that they belong to three species: resident *A. virgatus*, represented by an endemic subspecies here described, and the winter visitors *A. nisus* and *A. gularis*. A fourth species, *A. soloensis*, has erroneously been recorded but actually is likely to occur as a winter visitor, being already known from the Nicobars. These species and *A. badius* (not known from the Andamans but widely distributed in south-east Asia) have often been confused. In this paper the characters by which they may be distinguished, their distribution, geographical variation and migrations are discussed.

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INTRODUCTION

The occurrence of sparrow-hawks in the Andaman Islands has been known for over a century or, to be exact, since 24 April 1873, when W. R. Davison obtained an adult female (Hume 1874: 141). Two years later Hume (1876: 280) recorded three more specimens: a juvenile male and two juvenile females, which had been forwarded to him by Captain Wimberley. Breeding was established early in the present century by Osmaston (1906) and Wickham (1910).

These older authors, using binary nomenclature, identified their birds as *Accipiter virgatus*, although Hume, observing some differences between mainland specimens of *A. virgatus* and Andaman birds, wondered whether the name *A. gularis* might be applicable to the latter. With the introduction of ternary nomenclature, the names *A. gularis nisoides* (cf. Baker 1928: 164), *A. virgatus nisoides* (cf. Peters 1931: 223), *A. virgatus gularis* (cf. Ali & Ripley 1968: 250) and *A. virgatus besra* (cf. Brown & Amadon 1968: 469) came into use for the Andaman resident birds.

As far as I know, the four specimens recorded by Hume and a single specimen of a different species, the winter visitor *A. nisus nisosimilis* (cf. Hume 1876: 280), remained the only sparrow-hawks ever obtained in the Andamans until Abdulali (1965: 507) recorded three more, collected by him personally in 1964, under the name *A. virgatus gularis*.

Incidental to a study of resident *A. virgatus* from Formosa (Taiwan), I examined the adult Andaman female previously recorded by Hume (BM no. 85.8.19.690) which I found to be close to *A. v. affinis* from continental

Asia, but smaller. This led me to observe: "This bird probably represents an undescribed subspecies, characterized by small size. The breeding records quoted by Abdulali (1965: 507) would refer to this form and certainly not to *A. v. gularis*, under which name he lists them" (Mees 1970: 291).

From the preceding notes it will be clear that the identity of the sparrow-hawks inhabiting the Andaman Islands was not yet definitely settled. Therefore I gladly accepted an offer by Mr Abdulali to forward for my examination the sparrow-hawks collected by him in the Andamans, together with some specimens from peninsular India and one from Camorta Island, Nicobars, for comparative purposes. In addition to the specimens collected in 1964, this material included a bird obtained during a more recent visit to the Andamans, making four altogether from that locality.

The results of this study can be summarized as follows: three species of *Accipiter* are known from the Andamans, of which one (*A. virgatus*) is a resident belonging to an endemic subspecies here described, and two (*A. nisus* and *A. gularis*) are winter visitors. In literature one finds a fourth species listed from the Andamans: according to a number of recent authors, *A. soloensis* would occur as a winter visitor. As will be explained in the discussion of *A. soloensis*, the record is erroneous although actually the species may be expected for it is an apparently regular visitor to the Nicobars.

An unexpected additional result is the identification of two specimens of *A. gularis* from Point Calimere, southern India. These are apparently the first records from continental India and their location makes it likely that in

fact this migrant is more widely distributed but has not been recognized. Confirmation of this has already been obtained to a certain extent.

It proved impossible to discuss the Andaman sparrow-hawks properly without paying attention to related species and subspecies from the mainland of south-east Asia and for that reason this paper has expanded beyond the limits, if not the scope, originally envisaged. The need for this came as a surprise, for the recent works of Brown & Amadon (1968) and Wattel (1973) had given me the impression that little museum work remained to be done on the genus *Accipiter*. Actually, and in spite of the fine work done by the authors just mentioned, a lot of traditional misconception remains to be cleared up. In this paper a modest beginning will be made.

Apart from the specimens individually recorded, I have measured as a basis for comparison ten adult males and ten adult females each of *A. v. virgatus*, *A. g. gularis* and *A. soloensis* from Java, all from the collection of the Rijksmuseum van Natuurlijke Historie (RMNH). Additional material recorded in the text and in the tables is from the American Museum of Natural History (AMNH), Bombay Natural History Society (BNHS), British Museum (Natural History) (BM), Merseyside County Museum (MCM), Naturhistorisches Museum Wien (MV), and United States National Museum (USNM).

IDENTIFICATION

Several species of sparrow-hawks resemble each other closely, especially in the immature plumages, and this has led to frequent mis-identifications. It is therefore necessary to discuss the characters by which the following

species can be differentiated: *A. soloensis*, *A. badius*, *A. virgatus* and *A. gularis*. *A. trivirgatus* must also be mentioned in this connexion as in plumage it shows some resemblance to *A. virgatus*, but skins can always be distinguished by their heavy feet; for additional characters, see Mayr (1949).

In this section I shall discuss the various characters that in literature have been used for identification, and have this followed by a key. Many of the descriptions found in literature are quite satisfactory for the identification of adult birds, but break down when birds in immature plumage are studied. Indeed, it is my opinion that plumage characters are of little use in the identification of immature birds, an opinion supported by the many mis-identified specimens one finds in collections. Therefore I have in the key almost ignored plumage characters, but have worked with measurements and proportions. My ambition has been to enable anybody to identify specimens by taking a few simple measurements, and without any comparative material. Therefore characters that can only be evaluated by comparison have also been avoided. I believe that correctly sexed material can always be identified with the key. As regards wrongly sexed specimens (of which unfortunately large numbers clutter collections) I am not so sure.

Median stripe down the throat. This character has been used extensively to distinguish between *A. virgatus* (stripe broad) and *A. gularis* (stripe narrow). Whereas in *A. virgatus* this is indeed a reliable character inasmuch as this species shows in all plumages a comparatively broad stripe, it is not so satisfactory in *A. gularis*, being variable to the extent that in some specimens it is practically absent, in others so broad as to equal or al-

most to equal certain individuals of *A. virgatus*. Only when direct comparisons are made will it be seen that the former has the stripe darker and more sharply defined. If a bird has a broad and somewhat fluffy looking median stripe, it is definitely not *A. gularis*. Adult specimens of *A. soloensis* rarely show a median stripe and if it is present, it is grey rather than blackish, but birds in immature plumage have it invariably, blackish and fairly broad, usually supported by a few smaller and narrower lateral stripes. In both adults and immatures of *A. badius* the median stripe is frequently present, moderately developed, but other individuals only show a few inconspicuous non-median longitudinal striae on the throat.

Bands on the tail. In two species, *A. badius* and *A. soloensis*, the adult birds have or may have the middle pair of rectrices, which in the closed tail covers the others, without distinct cross-bars. In *A. soloensis* these feathers are dark grey, gradually changing to blackish towards the tips. In *A. badius*, which is lighter grey above, there is a distinctive subterminal black band followed by a narrow white margin; sometimes there is also a suggestion of one or two dark cross-bars, but these are never fully developed. When studying material of these two species, one should be aware of the possibility that the central rectrices are missing; the other rectrices have cross-bars, not very pronounced in *A. soloensis*, very distinct in *A. badius*.

I do not understand the remark made by Brown & Amadon (1968: 514) under the heading Field Characters of *A. soloensis*: "Could be confused with the Shikra (*A. badius poliopsis*), which occurs in part of the range, but should be distinguishable by (1)

upper side much clearer blue grey than the Shikra...". In my material the difference is just the other way round: the upper parts of adult *A. badius poliopsis* are light blue-grey, whereas *A. soloensis* is dark grey above.

In general terms the bands can be described as follows:

A. virgatus: 4 broad dark bands, about as wide as the pale bands separating them; in some individuals all four bands are visible, in others the proximal one is concealed under the upper tail coverts.

A. gularis: 4, sometimes 5 bands, usually narrower than the pale bands separating them; usually four bands are exposed.

A. badius: central feathers in adults with only the terminal band well-developed, the others weakly indicated or entirely absent; lateral rectrices of adults and juvenile tails with 4-6 bands.

A. soloensis: central rectrices of adult males usually without bands, of adult females sometimes without bands; lateral rectrices of adults and juvenile tails with 4-6 bands.

One of the problems is to decide exactly how many bands there are. Whereas in the distal part of the tail this is no problem, in the proximal part there is often some darkening near the base of the feathers which could or could not be counted as a band. One might try to escape from this problem by counting only the exposed bands, visible without looking below the upper tail-coverts, but that does not help much as usually one band is about half covered by the coverts, and moreover especially the larger of these coverts are frequently missing in skins, so that whether or not one counts a band comes to depend on how many coverts the specimen has lost in the process of preparation. In addition there

is a relatively large variation in the number of bands, even within one species (as listed above). Evidently the bands of the tail are of very limited use in identification; all I would dare to say is that *A. virgatus* can usually be recognized by having the bands broad and well-defined.

Under wing pattern. Adult individuals of *A. soloensis* differ from all other species in having the underwing not barred; the outer primaries are blackish below, the remainder of the underwing is white or pale buffish. Unfortunately, in immature birds the outer primaries are more or less barred underneath and such birds also have the underwing coverts with some dark spotting. Previous authors (e.g. Brown & Amadon 1968: 515) have used this character but without mentioning its restriction where immature birds are concerned. *A. virgatus* and *A. gularis* always have a strongly barred underwing pattern, but *A. badius* is variable: some specimens are as lightly barred as immature *A. soloensis*, others are almost as heavily barred as *A. virgatus* and *A. soloensis*. In other words, only adult *A. soloensis* can be readily distinguished by this character. The illustrations in King & Dickinson (1975: pl. 6) show the differences between adult birds of *A. badius*, *A. virgatus* and *A. soloensis* very well as far as colour pattern is concerned, but the artist has completely missed the structural differences in wing shape; surely *A. soloensis* has pointed wings and not the extremely blunt ones indicated, and the same can be said in a lesser degree of *A. badius*. The figures given by Grossman & Hamlet (1965: 247) are much better.

Colours of unfeathered parts. As is usual in collections, only a minority of specimens has the colours of the unfeathered parts in-

dicated on the labels.

A. soloensis: iris of ♂ ad. dark brown or dark red, of ♀ ad. and immature birds of both sexes yellow or orange-yellow, bill slate to black, cere orange-yellow to orange, feet orange-yellow to orange. The sexual difference in iris colour must have been noted by many collectors, and was recorded by La Touche (1932: 188-190), Kolthoff (1932: 138-139), Stresemann (1941: 85), etc. It is confirmed by material examined by me, collected by Bartels, Coomans de Ruiter, Jacobson & van Heurn, and Kooiman.

A. g. gularis: iris of ♂ ad. red-brown, of ♀ ad. and immature birds of both sexes yellow, bright yellow or dark yellow, bill dark grey with a black tip, cere greenish, feet light greenish to bright yellow, nails black. Sexual dimorphism in colour of the iris was already recorded by Swinhoe in Gurney (1863), followed by La Touche (1932: 193-194) and Shaw (1938: 153) and is confirmed by such specimens in our collection as have the colours of the unfeathered parts recorded on their labels.

A. g. iwasakii: iris in adults of both sexes yellow (based on only one specimen of each sex).

A. v. virgatus: iris ♂ ad. dark cadmium yellow, ♀ ad. yellow, in immature birds greyish yellow or greenish yellow, in a nestling (♀) greenish grey, bill dark grey to blackish, cere greenish, feet light greenish to bright yellow, nails black. As far as can be ascertained from the material at hand, there is little sexual dimorphism in iris colour, but from this species the data sheets of the Bartels collection are missing, and the assumption that the adult male has a yellow iris is based on two specimens only.

A. v. affinis: iris ♂ ad. orange (BM no.

1937.1.17.85), ♀ ad. bright yellow (BM no. 1949 Whl. 1-161). See also Deignan (1945: 67).

A. v. besra: iris ♂ ad. orange-yellow (BM no. 1959. 19.1), orange-red (BM no. 1956.44. 8) or bright orange-red (BM no. 1956.44.7).

A. badius: iris ♂ ad. light orange, ♀ ad. yellow, ♂ im. greenish yellow, bill black, near gape greyish or bluish, cere green to greenish yellow, feet yellow, nails black.

Note that the adults of *A. soloensis* and *A. g. gularis* have a pronounced sexual dimorphism in iris colour, that is absent in *A. virgatus* and *A. badius*, where adult males have the iris merely deeper in colour, orange rather than yellow.

It is not surprising that the sexual dimorphism in iris colour, combined with the generally poor labelling of specimens, has been too much for ornithological illustrators. Thus, Brown & Amadon (1968) show the adult male of *A. gularis* with a yellow iris (pl. 62 fig. 1), the adult female of *A. soloensis* with a dark brown iris (pl. 77 fig. 2). The adult male *A. gularis* figured in Etchécopar & Hüe (1978: pl. 4 fig. 3) also shows a yellow iris. The bird so beautifully illustrated in Kuroda (1936: pl. XXIV fig. 2) under the name *A. v. virgatus* ♂ ad. shows hardly a trace of a median stripe down the throat, neither has it the dark streaks on the upper breast which are characteristic of that species. The measurements of this specimen, provided by Kuroda (l. c.: 513): wing 166, tail 118.5 mm, prove its identity as *A. gularis*. Therefore the yellow iris pictured is definitely wrong.

A. soloensis differs from all others by the brighter more orange colours of cere and feet and the difference remains visible in skins, inasmuch as all specimens of *A. soloensis* examined by me, be they adults or immatures,

can be recognized by the pale yellowish cere, which contrasts conspicuously with the dark bill and the dark feathers of the forehead. For identification this is, however, of limited value: birds with a dark or blackish cere (in skins) are not *A. soloensis*, but it does not always work the other way round as in all three other species occasional skins are found in which the cere (sometimes also the bill) is pale.

Wing shape. A difference in shape of the wing tip between *A. virgatus* and *A. gularis* was noted as long ago as 1862 by Schlegel (1862: 32-33), the former having the: "Quatrième rémige dépassant à peine la cinquième", the latter having: "la quatrième rémige dépassant notablement la cinquième". This character was accepted as an excellent and highly reliable one by Ogilvie-Grant (1896: 105), but rejected by Hartert (1910: 211): "I find, however, that this character varies considerably and is therefore not reliable". Subsequent authors have again paid attention to the wing-formula, the proportional lengths of the primaries. Apart from the existence of variation as already noted by Hartert, characters that have to be described in terms of "a little larger" against "notably larger" have an element of inexactness and subjectivity that makes them difficult to use. A far more useful character was introduced by Voous (1950), probably inspired by Mayr (1949). Voous measured the wing tip, being the difference in length between the longest (be it the third, fourth or fifth) primary and the tenth (innermost) primary; this measure he also expressed as a percentage of the whole length of the folded wing. Wattel (1973) followed suit and provided a whole series of very useful measurements. I find the length of the wing tip the easiest and most reliable character

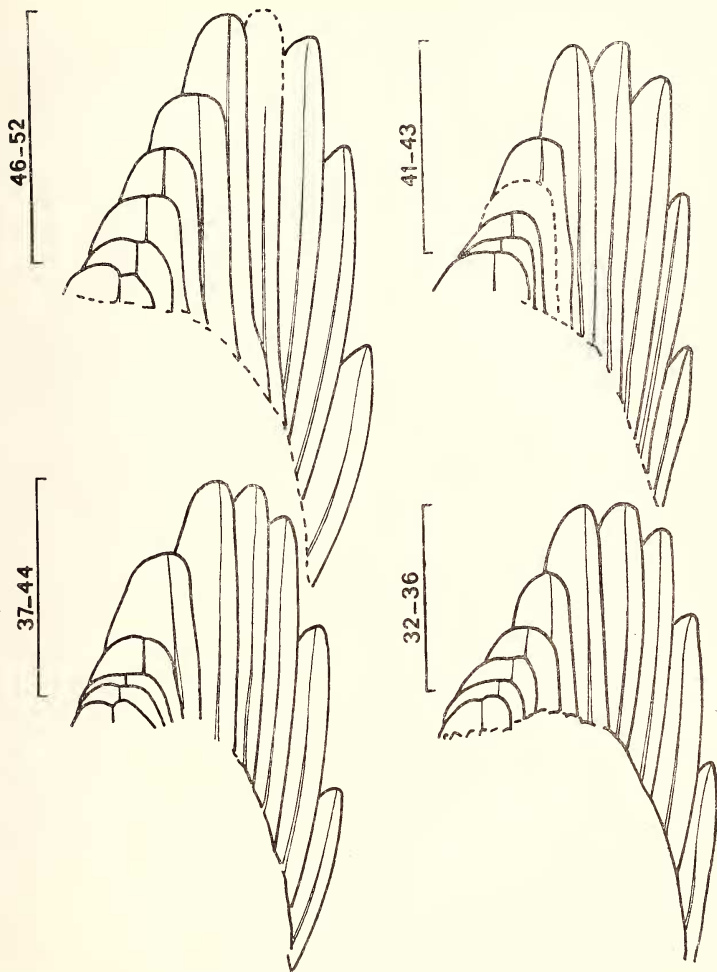


Fig. 1. Wing tips. Top: *A. v. affinis*, left ♀, right ♂. Bottom: *A. v. virgatus*, left ♀, right ♂.

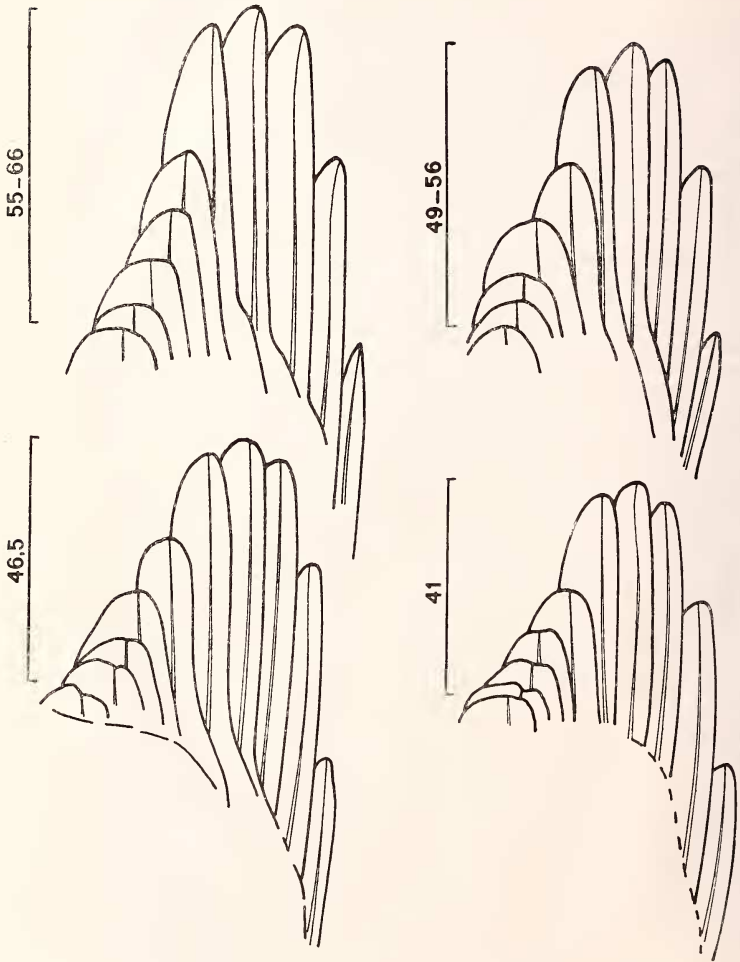
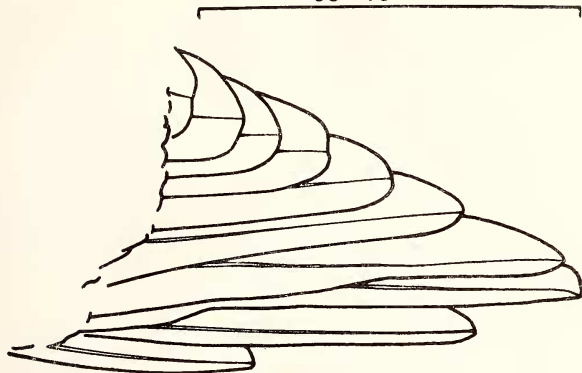


Fig. 2. Wing tips. Top: *A. g. gularis*, left ♀, right ♂. Bottom: *A. g. iwaxakit*, left ♀, right ♂.

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Fig. 3. Wing tip of *A. soloensis* ♀

there is. By simply measuring the length of the wing tip, a complete separation between *A. virgatus* and the other three species can be made. In the available material a complete separation between *A. soloensis* on the one hand against *A. g. gularis* and *A. badius* on the other hand is also possible, but the extreme measurements are so close that in very large series the possibility of some overlapping must be envisaged. Finally, *A. badius* and *A. g. gularis* cannot be separated by wing tip length and wing tip index, these being very similar in both. In their case, wing length and tail length have to be used.

It is necessary to mention that, within the confines of India, there is one other small sparrow-hawk with a very blunt wing: *A. butleri*, in which according to Wattel (1973: 33) the wing tip index is 22.3%. This species, being endemic to the Nicobars where *A. virgatus* does not occur, cannot be confused with it. The blunt wing will, however, serve to distinguish *A. butleri* from the migrant species

A. gularis and *A. soloensis* which visit the Nicobars in the northern winter.

Foot-structure. Traditionally much attention has been paid to the structure of the foot in the classification of *Accipiter*-species; formerly the distinction between the genera *Astur* and *Accipiter* was largely based on it, species ascribed to the first genus having generally heavier feet with shorter toes. Of the species here discussed, *A. soloensis* and *A. badius* used to be placed in *Astur*, whereas *A. virgatus* and *A. gularis* (as well as *A. nisus*) were regarded as "typical" of *Accipiter*, having long and slender toes. Ali & Ripley (1968: 232-233) still use this old distinction in their key, where they separate *A. virgatus* (including *A. gularis*, regarded as a subspecies by these authors) from *A. badius* by the former having: "Middle toe without claw considerably longer than outer toe with claw", and the later: "Middle toe without claw about as long as outer toe with claw". Actually, the difference is slight and in both species as well

as in *A. gularis* the outer toe with claw is about equal in length to the middle toe without claw. It is true that *A. badius* has generally somewhat shorter toes than *A. virgatus*, but the relative proportions of the toes do not differ and therefore cannot be used for their separation. Whereas *A. soloensis* has, compared with *A. virgatus*, conspicuously short toes (see table), the same cannot be said of *A. badius*, which has the toes only a little shorter and less slender than *A. virgatus*.

Sexual difference in size. In the absence of weights, which would give a much better picture of the actual differences between the sexes, I have been forced to use wing length as a measure of size differences between the sexes. It will be clear that, being one-dimensional, these do not do justice to the great differences in bulk they express so inadequately.

It is a pity that of several forms the numbers of specimens are insufficient to work out satisfactory averages, but even so it is evident that the sexual difference in size is a reliable specific character: within each species, even when that is divided into several well-differentiated subspecies, it is almost constant, but there are significant differences between the species. Summarizing from the table, it will be seen that the greatest sexual difference is found in *A. virgatus* (wing length of males 80-84% of that of the females), less so but still considerable in *A. gularis* (87-88%), and in *A. badius* (88.7-92.6%), and very little in *A. soloensis* (97.3%). It is tempting to speculate about possible explanations for these interspecific differences, but that is outside the scope of this purely descriptive contribution. Therefore I refer to the interesting discussions given by Brown & Amadon (1968: 26-28), and Amaden (1975), and only note that the two species with the greatest sexual

dimorphism in size are bird-hunters, whereas the intermediate *A. badius* has a mixed diet and the species with the least dimorphism, *A. soloensis*, appears to feed mainly on insects, amphibians and reptiles (cf. Wattel 1973: 32).

IDENTIFICATION KEY

- 1a. In adult plumage, under surface of folded wings not barred; outer primaries black or blackish, remainder white or pale buffish; in the immature plumage, the outer primaries can be barred below; third primary usually longer than fourth, sometimes equal; wing tip 68-75 mm or c. 37% of wing length. *A. soloensis*
- b. In all plumages under surface of folded wings at least on the outer primaries distinctly barred dark brown-grey and white; third primary usually shorter than fourth, sometimes equal; wing tip 35-66 mm or 23-34% of wing length. 2
- 2a. Wing tip in males 35-43 mm, in females 41-52 mm, or 22.8-28.5% of wing length; under surface of folded wings entirely barred. *A. virgatus*
- b. Wing tip in males 49-63 mm, in females 55-66 mm, or 27.6-34.2% of wing length; under surface of folded wing either entirely barred, or barring more or less restricted to the primaries. 3
- 3a. Wing in males 160-170 mm, in females 183-197 mm, tail in males 111-118 mm, in females 120-134 mm, or 64.7-71.3% of wing length; under surface of folded wing entirely barred. *A. gularis*
- b. Wing in males 172-200 mm, in females 194-214 mm, tail in males 125-150 mm, in females 143-168 mm, or 70.7-78.5% of wing length; barring on under surface of folded wings somewhat variable, usually weak or absent on the secondaries. *A. badius*

ACCIPITER NISUS NISOSIMILIS (TICKELL)

Falco Nisosimilis Tickell, 1833, J. Asiat. Soc. Bengal 2: 571—Marcha, in Borabhum.

Material from the Andamans. ♀, x.1875. South Andaman, leg. J. N. Wimberley (BM no. 85.8.19.594), an immature bird in its first

autumn. Wing 248, tail 174, tarsus 63, culmer from cere 15 mm.

Discussion. This migrant from Central Asia is a winter visitor to India and Burma, but it has never been recorded from Sumatra and the Malay Peninsula. The Andamans must be near the south-eastern limit of its winter range and it is unlikely that *A. nisus* is more than an occasional visitor to the islands. Its large size will serve to distinguish this species from other members of the genus occurring in the Andamans.

ACCIPITER VIRGATUS (TEMMINCK)

Characters. *A. virgatus* shows in most of its subspecies no more than a moderate sexual difference in plumage, but a conspicuous one in size. As regards sexual differences in plumage, adult males and adult females of *A. v. affinis* and *A. v. besra* differ only in the former having the back blackish grey, the latter having the back with a brownish tinge. There is no sexual difference to speak of in colour and colour pattern of the under surface. In *A. v. abdulii*, on the other hand, the females are in colour similar to females of the mainland subspecies, but the male is distinguished by the very different underparts. A character by which *A. virgatus* can in all plumages be readily distinguished from *A. soloensis*, *A. badius* and *A. g. gularis*, is found in its rounded wings, the wing-tip of the subspecies occurring in India being 35-43 mm in males, 41-52 mm in females, or 23.0-24.4% of the wing length. Middle toe long. Underwing strongly barred. A broad longitudinal middle stripe on the throat is present in all plumages.

Distribution. This species has an extensive range in south-east Asia. On the mainland it occurs along the Himalayas to as far west as Kashmir, in Assam, Burma, Thailand,

Indo-China, central, south and east China; also Hainan and Formosa, southern peninsular India and Ceylon, the Andamans the Philippines, Borneo, Sumatra, Java, Bali and Flores.

Habitat. *A. virgatus* is essentially a forest bird, this in contradistinction to *A. gularis* which (at least in its winter quarters) prefers the more open types of vegetation provided by village gardens and cultivated country. The vertical range is from the lowlands to 3000 m.

Wattell (1973: 40) stated that: "The species is found in moist-deciduous forests and plantations in the mountains of southern India and Ceylon... in the equatorial belt it ranges mostly between 1000 and 2200 m". However, in Ceylon, an island certainly within the equatorial belt, *A. v. besra* ranges over all zones, from sea-level to at least 6000 ft (Whistler 1944: 249). In southern India, Ali (1969: 56) knew it from levels of 600-1200 m, but the specimens from Point Calimere (♀ ad.) and Bhavnagar (♀ im.) prove that it does visit the lowlands. As lowland forest has become so scarce through the activity of *Homo sapiens*, it will be difficult to decide whether the apparent restriction to the higher levels is actually caused by a preference for these levels, or is due to a forced retreat from the lowland as a result of human activities.

Although both Voous (1950) and Wattell (1973: 40) reported *A. virgatus* in the Sunda Islands as a mountain bird, it is not exclusively so, for Coomans de Ruiter (1936) found a nest in Koeboe, West Borneo, a lowland region remote from any mountains. Both Voous (1950) and Wattell (1973: map 4) overlooked this record as well as a whole string of other records from Borneo (summarized by Smythies 1957: 578; see also Smythies 1960: 149 and 1968: 152), and concluded mistakenly

that in Borneo this species is known from Mt Kinabalu only. On the distributional map given by Brown & Amadon (1968; map 37) the Bornean race *A. v. rufotibialis* is also shown as restricted to Mt Kinabalu, although in their text these authors record it also from Mt Dulit and the Kelabit Plateau, which is of course still giving it much too limited a distribution. The clutch from Koeboe, collected by Coomans de Ruiter personally, is now in our collection (RMNH no. 73548); the two eggs agree well with eggs of *A. v. virgatus* from Java and I see no reason to question their identification. As Coomans de Ruiter mentioned an additional clutch from Koeboe and also two nests from Pontianak, it is evident that reproduction in the lowlands of West Borneo is not exceptional but takes place regularly.

In Java also, the assumption that *A. v. virgatus* is confined to mountain forest requires revision. Its range as defined by Voous (l. c.) is: "Java and Bali, at 1200-2200 m altitude; occasionally in the lowlands (juvenile from Brebes... less than 100 m)". Although Voous did mention the juvenile bird from Brebes, he did not comment on the material from Buitenzorg (270 m) that he examined and he failed to indicate that locality on his map. Neither did he discuss Soekaboemi (600 m). On the other hand, he extended the normal vertical range up to 2200 m on the basis of a single specimen from that altitude. That is how mountain birds are created in literature. Our collection contains specimens from the following lowland localities: Meester Cornelis, Buitenzorg, Moeara Beting-Krawang (this would have been mangrove forest), Tjibareno, Bandjar, Tegal-Brebes, Djember (all below 300 m), Tjibadak (400 m), Soekaboemi (600 m), etc. It is necessary to state that amongst

birds from lowland localities there are several in fully adult plumage, so that the occurrence in the lowlands cannot be dismissed as merely a matter of juvenile dispersal in the post-breeding period. I note that Hoogerwerf (1970: 454), on admittedly very slender evidence, assumed breeding in the lowland reserve of Ujung Kulon. The explanation for the fact that in Java the species has more often been recorded from the higher levels appears to be simply that it is a forest bird and lowland forest in Java is and was already in the first half of this century, extremely scarce. The most one can say is that the bird is perhaps more common at the higher levels (cf. Hoogerwerf l.c.).

Wattel (1973: 40) refers to Sody as evidence that in Java *A. virgatus* occurs in the teak forests; now *Tectona grandis* plantations provide a very open kind of woodland and in Java they are to my knowledge practically confined to the flat lowlands, whereas according to Wattel (admittedly erroneously as pointed out above), the vertical distribution of *A. virgatus* in Java is from 1000-2200 m. Checking the reference given (Sody 1953: 138) I found that the bird was recorded under the name *A. v. gularis* and was moreover clearly stated to have been: "Een exemplaar van het trekkende ras".

Voous's opinion that in the Sunda Islands, within suitable habitat, the species is rare, is also in need of modification. At the time Voous was able to muster only 27 specimens from the Greater and Lesser Sunda Islands combined, but through purchases (mainly of the Bartels collection) and bequests our collection has grown so much that now we have 85 specimens from Java alone. The number of skins of *A. gularis* from Java in our collection is now 62, so that the ratio between the two

species has become reversed.

Geographical variation. Wattel (1973: 34-43) divided the subspecies of *A. virgatus* into three groups, the *gularis*-group, the *virgatus*-group and the *affinis*-group. I consider his *gularis*-group to constitute a distinct species, *A. gularis*, not even very close to *A. virgatus*. This leaves Wattel's two other groups: the *virgatus*-group in which he placed the subspecies from the Sunda Islands and the Philippines, as well as *A. v. besra* from southern India and Ceylon, and the *affinis*-group, reserved for *A. v. affinis*. He explained this view with the statement that: "Birds from southern India and Ceylon... are closely similar to the Malaysian races, but this similarity is due to convergence rather than to former geographical contact". My opinion is that this division is artificial. The difference between *A. v. besra* and *A. v. affinis*, assigned to different groups by Wattel, is merely one of size, and everything points to the two being closely related, as indeed one would expect on zoogeographical grounds. In making this unnatural division, Wattel may have been influenced by Hartert (1910: 210-211) and Swann (1921-1922: 61 and 1926: 327), who treated *A. v. besra* as a race of *A. virgatus*, but treated *A. v. affinis* as a separate species under the name of *A. affinis*. On the other hand it is perfectly true that *A. v. besra* as well as *A. v. affinis* are also very close to *A. v. virgatus* and certainly not sufficiently different for these subspecies to be placed in different groups. To me it seems that, if groups have to be made at all, the Philippine subspecies should rather be treated as a separate group. Unfortunately our collection contains only a single specimen from the Philippines (♂ ad., 21-x-1887, Ayala, Mindanao, leg. F. S. Bourne) which is conspicuous by the com-

plete absence of barring on the ventral surface, and by the strong reduction of cross-bars on the tail. I note that Wattel (1973: 42-43) appears to be of the same opinion, as he states: "Apparently *confusus* originated independently whereas *vanbemmeli*, *virgatus*, and *rufotibialis* had a common origin". In this connection one wonders why, nevertheless, he placed them all in the same group, just as it seems illogical that he treats *besra* throughout as a member of the *virgatus*-group, but ends by saying that the similarity is due to convergence.

The subspecies of *Accipiter virgatus* are the following:

- A. v. virgatus* (Temminck, 1822): Java, Bali, Flores.
- A. v. vanbemmeli* Voous, 1950: Sumatra.
- A. v. rufotibialis* Sharpe, 1887: Borneo.
- A. v. besra* Jerdon, 1839: Ceylon and southern India.
- A. v. affinis* Hodgson, 1836: Himalayas to eastern China.
- A. v. fuscipectus* Mees, 1970: Formosa.
- A. v. abdulali* subsp. nov.: Andamans.
- A. v. confusus* Hartert, 1910: northern Philippines.
- A. v. quagga* Parkes, 1973: southern Philippines.

The subspecies *A. v. kashmiriensis* Whistler & Kinnear has not been included as it is only doubtfully separable from *A. v. affinis*, under which subspecies a discussion of its validity will be given. It should further be clear that this paper is not a revision and that subspecies will only be treated in as far as they have a bearing on the correct identification of birds from the Andamans. Therefore I have not attempted to study the subspecies from

Sumatra, Borneo, and the Philippines. For a discussion of the former, I refer to Voous (1950), for a discussion of the latter see Parkes (1973: 17-19).

In this paper I am not particularly concerned with historical zoogeography but it will be clear that the apparently wide distribution of *A. virgatus* in the tropical lowlands makes at least debatable Wattel's (1973: 18, also 43) surmise that: "*A. virgatus* probably never had a continuous distribution across the Sunda shelf, because at present it is restricted to hill and mountain country. Therefore, its dispersal must have taken place earlier or was achieved by long-distance colonization. The occurrence of *A. virgatus* on the Andamans and on Flores prove that such long-distance colonizations have occurred...". It is also unclear to me what exactly Wattel means with a dispersal that has taken place earlier; earlier than what?

Accipiter virgatus affinis Hodgson

Accipiter affinis Hodgson, 1836, Bengal Sporting Mag. (n. s.) 8: 179.—Nepal (reference not verified).

Material examined. ♂, undated, before 1862, Nepal, collector unknown (RMNH cat. no. 1, recorded by Schlegel 1862: 33 as *Nisus gularis*); ♂ im., undated, North Bengal, leg. S. Pinwill (BM no. 76.10.20.29); ♂, undated, Darjeeling, leg. J. Fortheringham (BM no. 77.2.20.6); ♀, 1873, Darjeeling, collector unknown (BM no. 85.8.19.681); ♀, xii.1877, Darjeeling, leg. Hume (BM no. 85.8.19.684); ♀ im., undated, Murree, Punjab, leg. J. Bid-dulph (BM no. 97.12.10.1749); ♀, xii.1910, Sukna, Darjeeling, leg. H. K. Robinson (BM no. 1921.7.12.31); ♀, 8.v.1922, Ranikhet, U.P., leg. F. Field (BM no. 1949 Whl. 1-161); ♀ im., 15.viii.1922, Gulmarg, Kashmir, 9000', leg. B. B. Osmaston (BM no. 1949 Whl. 1-

170); ♀. 9.i.1932, Kangkwa Cliq, Tuiwa Re-rame, Katha Distr., Burma, 1100', leg. H. C. Smith (BM no. 1948.80.3652); ♂ juv., 9.ix.1935, Chilung Pati, Nepal, 9500', leg. F. M. Bailey (BM no. 1938.7.15.121); ♂, 11.vii.1936, Nyug La, Pachakshiri, S. E. Tibet, 10,000', leg. F. Ludlow (BM no. 1937.1.17.85); ♀ im., 16.xi.1938; Chungkar, S. E. Bhutan, 6500', leg. illegible initials (BM no. 1938.12.13.99).

In addition I made use of the list of measurements of material I examined some years ago (Mees 1970: table II).

Distribution. The distribution as ascertained from material examined and from reliable literature records is from Kashmir and the extreme north-east of Pakistan (Murree near Rawalpindi) eastwards along the Himalayas, through Assam, Burma, northern and eastern Thailand, to Indo-China, southern, central (to as far north as the Tsinling mountains, cf. Cheng 1973: 47) and southeastern China. The range does nowhere extend into the Indian Plain. The vertical distribution is considerable, extending from little above sea level to 3000 m (cf. list of material examined, which was collected between 1100' and 10,000', or between 330 and 3000 m).

In Burma, *A. v. affinis* is widely distributed; it is obviously a resident on Mt Victoria (Stresemann & Heinrich 1940: 249) and has been recorded from Pegu (BM no. 84.1.30.22, cf. Mees 1970: 288), but I doubt that it occurs in Tenasserim: the eggs collected by Hopwood near Tavoy and listed by Baker (1935: 115-116) under the name *A. gularis nisoides* might be referable to *A. badius* rather than to *A. v. affinis*.

Characters. A large subspecies: wing length of 27 ♂ 159-171, 34 ♀ 190-207 mm.

Discussion. In the discussion of range and

movements (see also the section "Is *A. v. affinis* migratory?"), *A. v. kashmiriensis* has not been separated from *A. v. affinis*. The former is still a somewhat controversial subspecies. It was accepted by Ripley (1961:47), Ali & Ripley (1968: 246-247) and Abdulali (1969: 704), but rejected by Vaurie (1965: 165), whereas I (Mees 1970) was doubtful of its validity. Wattel (1973) entirely ignored the name, but whether this was because he did not recognize it, or simply overlooked it (as suggested by the fact that in his extensive bibliography the paper in which this subspecies was described is not listed) is not clear. I have no new evidence; anyway, *A. v. kashmiriensis* is at most a weakly differentiated form, continuous in range with *A. v. affinis*, so that it appears entirely justified to treat the two together. It is perhaps relevant to mention that although the subspecific name *kashmiriensis* was bestowed on the western birds, the type-locality is Murree, which is in the Punjab and has never been in Kashmir although it is close to the border. Whistler & Kinnear (1936: 435), writing about *A. v. kashmiriensis*, stated with much confidence: "The birds which appear in winter in the United Provinces belong to this western form". They remained completely silent, however, on which birds exactly they had in mind when making this statement. As mentioned, I have been unable to find any reliable records of winter birds from outside the presumed breeding range.

Incidentally, in dealing with the subspecies *A. v. kashmiriensis* a nice point arises as to whom authorship should be ascribed. The paper which I am citing as being written by Whistler & Kinnear, actually bears on its title page the indication that it is "by Hugh Whistler, assisted by N. B. Kinnear". Even so, both authors would be responsible for this and

other new names, but I noted that in the discussions accompanying the descriptions of the new names, invariably the first person singular is used. Kinnear's contribution is nowhere made clear.

Accipiter virgatus besra Jerdon

Accipiter besra Jerdon, 1839, Madras J. Litt. Sci. 10: 84.—Soonda Jungles, South India. (reference not verified).

Material from Sri Lanka. ♂, undated, Ceylon, no collector (BM no. 77.5.24.17); ♂, undated, Ceylon, leg. S. Bligh (BM no. 1955.6.N.20.2802, ex Norwich Castle Mus.); ♂, undated, Ceylon, leg. S. Bligh (BM no. 1955.6.N. 20.2803, ex Norwich Castle Mus.); ♀, undated, Ceylon, no collector (BM no. 87.11.1.242, ex Coll. Tweeddale); ♂, V. 1894, Coneygar, leg. A. L. Butler (BM no. 1916.9.20.524); ♂, 6.iii.1956, Kalatuwawa, E. of Colombo, leg. E. C. Fernando (BM no. 1956.44.8); ♂, 20.iv.1956, Kalatuwawa, leg. E. C. Fernando (BM no. 1956.44.7); ♂, 23.x.1958, Kalatuwawa, leg. E. C. Fernando (BM no. 1959.19.1).

Material from India. ♂, 18.xi.1881, Coonoor, Nilghiris, leg. W. Davison (BM no. 85.4.10.1); ♀, undated, Ootacamund, Nilghiris, leg. W. Davison (BM no. Gurney 2795, ex Newcastle Mus.); ♀ im., 18.ix.1901, Ootacamund, Nilghiris, no collector (BM no. 1949 Whl. 1-168); ♀, 10.xi.1939, Biligirirangan Hills, Mysore, ca. 3000', leg. Sâlim Ali (BM no. 1949, Whl. 1-169); ♀ im., 1.i.1956, Bhavnagar, Saurashtra, leg. Dharmakumarsinhji (BNHS no. 20773); ♀ juv. (large nestling or just fledged), 24.v.1956, Perumalmalai, Palni Hills, 5000', leg. N. A. Fuller & Bro. Novarro (BNHS no. 20016); "♂"=♀, 8.xi.1958, Shembagnur, leg. N. A. Fuller (BNHS no. 20734); sex?=♀, 21.xii.1971, Point Calimere, leg. BNHS party (BNHS no. 23911).

Distribution. Sri Lanka and southern India in forested parts: Palni, Nilghiri and Biligirirangan Hills; along the Western Ghats to as far north as the vicinity of Bombay and perhaps beyond. The bird from Bhavnagar must have been a straggler, the species is unlikely to breed in Saurashtra. Discussing the distribution of this subspecies, Baker (1928: 160) wrote: "there are typical specimens in the British Museum from Mhow". This must refer to specimen BM no. 75.6.24.15, the only sparrow-hawk of the *virgatus/gularis* group from Mhow in the BM collection; although labelled *A. v. besra*, it is *A. gularis* (see further under that species). Very little is known of the occurrence in the easterly regions of India: the older records were summarized by Whistler & Kinnear (1936: 435) and recently a specimen was collected at Point Calimere, as listed above.

Note that the breeding range of *A. v. besra* is widely separated from that of *A. v. affinis* and that the map published by Brown & Amadon (1968: map 37), which shows the two subspecies in broad contact along the Himalayan foothills, is completely misleading.

Characters. This subspecies differs from *A. v. affinis* merely in its smaller size: wing length of 8 ♂ 150-158, 7 ♀ 180-193, against 27 ♂ 159-171, 34 ♀ 190-207 mm in *A. v. affinis* (see table of measurements and Mees 1970; table II). Although there is a slight overlap in measurements, only two out of 34 females of *A. v. affinis* have a wing length of less than 194 mm (190, 191 mm).

I am unable to confirm the existence of consistent colour differences between *A. v. affinis* and *A. v. besra*, which most previous authors claimed (cf. Baker 1928: 159, Ali & Ripley 1968: 248). Admittedly some males from Sri Lanka are conspicuously red on the under-

parts (BM no. 77.5.24.17 being an extreme in this direction), but other specimens from the same island (cf. BM no. 1916.9.20.524) agree completely in plumage with average *A. v. affinis*. Elsewhere I have commented upon a rather red female of *A. v. affinis* from Tehri (Mees 1970: 291).

Discussion. Swann (1926: 324) gave for *A. v. besra* the following wing measurements: ♂ 165-167, ♀ 188-203 mm; although he correctly mentioned that this subspecies is larger than *A. v. virgatus*, the measurements he presented are much too large. Whistler & Kinnear (1936: 436) provided correct measurements, but erroneously claimed *A. v. besra* to be of the same size as the nominate race. This was repeated by Brown & Amadon (1968: 469), who made no direct comparison between this subspecies and *A. v. affinis*, but stated: "about the same size as the nominate race, but not so richly coloured. Wing ♂ 145-166, ♀ 182-189". These figures were obviously although without reference copied from Baker (1928: 160). The range of variation given for the males is surprisingly large, probably it includes measurements of *A. v. affinis* as Baker mentions under the name *besra*: "two specimens labelled as from North Bengal from the Pinwill Coll. These may be wrongly marked". I have examined one of the Pinwill specimens and see no reason to query its provenance, but of course it is *A. v. affinis*.

Wattel's (1973: 39) diagrams and figures indicate that *A. v. affinis* has a relatively longer tail than birds of his *virgatus*-group (including *A. v. besra*). For *A. v. affinis* he found a tail-length of 78.32% of the wing-length and for the *virgatus*-group this same value was 75.82%. By combining *virgatus* with *besra*, Wattel has, however, marked the fact that in relative length of the tail *A. v. besra* is

intermediate between *A. v. affinis* and *A. v. virgatus*, just as it is intermediate in linear measurements. The values found by me for the three subspecies are as follows: *A. v. virgatus* 10 ♂ 73.9%, 10 ♀ 73.3%; *A. v. besra* 8 ♂ 74.7%, 7 ♀ 76.5%; *A. v. affinis* 27 ♂ 76.8%, 33 ♀ 78.0%. For comparison the figures for the largest of all subspecies, *A. v. fuscipectus*, are 12 ♂ 78.2%, 9 ♀ 80.0% (cf. Mees 1970: table 1). It looks as if there is a direct relation between general size and relative length of the tail, the larger subspecies having relatively longer tails, but there is no evidence at all of a break between *A. v. besra* and *A. v. affinis*, sufficient to place them in different groups.

The bird from Bhavnagar was first recorded by Dharmakumarsinhji (1956) under the name *A. virgatus*; he did not go into the matter of its subspecific identity. The same bird was again discussed by Abdulali (1969: 704-705), who commented: "The ♀ from Bhavnagar (wing 185, tail 142) which was recorded as *besra* agrees in size with the adult female (by plumage) from the Palnis, but it is a juvenile and much paler in colour and appears to be of a northern race". As explained above, Dharmakumarsinhji did not assign the specimen to a subspecies; he used the name *Besra* in a vernacular sense only, but I have examined the specimen and do indeed consider that it belongs to *A. v. besra*. I do not find the bird paler than other specimens of this race and the measurements confirm its identity. Although the bird is immature, it is certainly full grown. Note that Baker (1928: 159 in key) claimed *A. v. besra* to be: "above paler in both sexes at all stages" than *A. v. affinis*. (*A. v. kashmiriensis* had not yet been described at the time and would have been included in *affinis*) and that Ali & Ripley

(1968: 249) called *A. v. besra* "much paler" than *A. v. affinis*. As mentioned above, I am unable to see any colour differences between *A. v. affinis* and *A. v. besra*, and as regards colours, the specimen from Bhavnagar fits well into either.

Accipiter virgatus abdulali subsp. nov.

Material examined. ♂, 25.ii.1964, Betapur, Middle Andaman, leg. H. Abdulali (BNHS no. 21897, type of *A. v. abdulali*); ♀, 14.iv.1873, South Andaman, leg. W. Davison (BM no. 85.8.19.690); ♀ juv., viii.1875, Andamans, leg. R. J. Wimberley (BM no. 85.8.19.688); ♀ juv., viii.1875, Andamans, leg. R. J. Wimberley (BM no. 85.8.19.689); ♂ juv., ix.1879, Andamans, leg. R. J. Wimberley (BM no. 85.8.19.687); ♀, 25.ii.1964, Betapur, Middle Andaman, leg. H. Abdulali (BNHS no. 21896); ♀, 9.iv.1969, Wrightmyo, South Andaman, leg. H. Abdulali and party (BNHS no. 23111).

Distribution. At present known from Middle Andaman and South Andaman, the two largest islands of the Andaman Group.

Diagnosis. Closest to the continental races *A. v. affinis* and *A. v. besra*; smaller than the former, but in size agreeing with the latter.

The adult male differs conspicuously from *besra* as well as from all other races of the species in the coloration and colour-pattern of the underparts. The breast is greyish tawny, flanks and belly are dull tawny, vent and under tail-coverts are white, and the feathers covering the tibiotarsus are uniform light grey. Apart from on a few axillaries, there is no trace of white cross-bars, or any other barring or pattern, except that the feathers of the breast have the outer margins a trifle darker and greyer than their central parts, giving the breast a faintly scalloped appearance. In the

aces *besra* and *affinis* cross-bars are always present, if not on the breast, at least on flanks and thighs; the upper breast usually has white in the middle with some dark longitudinal streaks, and the lower breast has a white median longitudinal streak; moreover although there is some variation in colour of the breast, not a single specimen has the greyish tawny colour of the Andaman bird.

Adult females are similar to females of *besra*, except that the bill appears to be a little larger, with especially the ridge of the culmen broader, less sharp. In addition the three Andaman birds have the cross-bars on the under surface a little broader and less sharply defined, and have the barring of the feathers covering the tibiotarsus weaker, than the four specimens of *besra* with which they were compared, but the variation found in males and in other races suggests that individual variation would cover these differences if sufficiently large material were available.

Discussion. The description of *A. v. abdulalii* of which females and juveniles have been in collections for over a century, was made possible by the discovery of an adult male. It is with real pleasure that I dedicate this subspecies to the collector of this specimen, Mr. Humayun Abdulali, who has made such outstanding contributions to ornithological knowledge of the Andaman and Nicobar Islands.

Whether my statement that this subspecies agrees in size with *A. v. besra* is entirely correct, remains uncertain as long as only one adult male of *A. v. abdulalii* is known. Actually the two males of this race are a little smaller than any of *A. v. besra* I have examined, but then the juvenile male (wing 145 mm) is perhaps not quite full grown and that may also have influenced the figure for the sexual

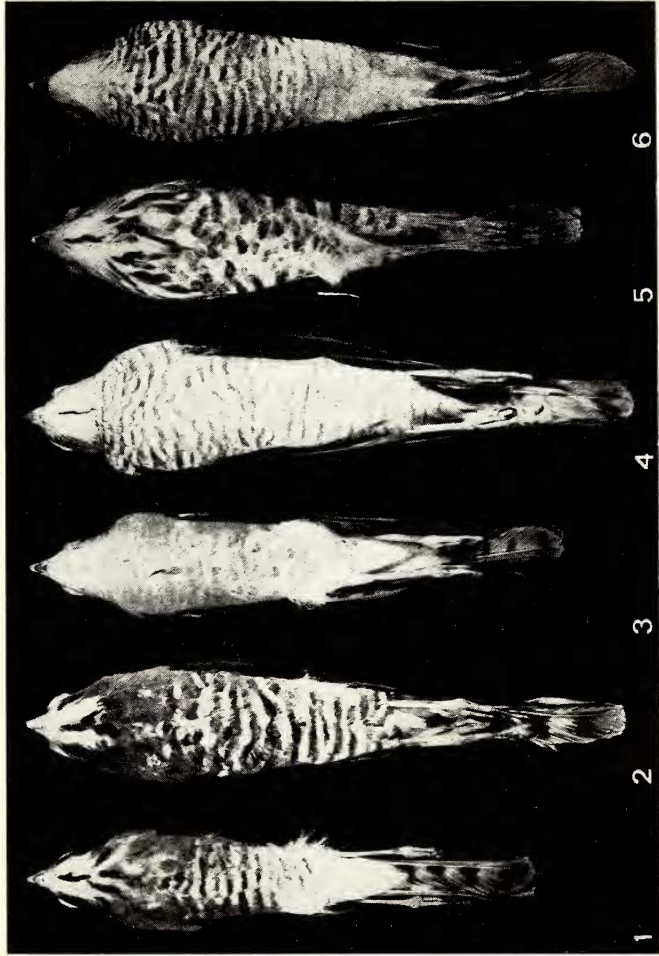
difference in wing length (males 80% of females, against 82.7-84% in the other races).

ACCIPITER GULARIS (TEMMINCK & SCHLEGEL)

Characters. The two subspecies of which this species consists are in several respects so different that it is difficult to supply diagnostic characters covering both. As *A. g. iwaskii* is confined to two small islands in the Riu Kius, where it is known to be sedentary, whereas the nominate race is widely distributed and, being strongly migratory, in its winter quarters with which this paper deals is frequently confused with other species, I shall give here the diagnostic characters of *A. g. gularis* only.

Sexual difference in size is considerable, but not so great as in *A. virgatus*. Sexual dimorphism in plumage remarkable: the adult female plumage is quite unlike that of the male, or than that of any of the other small species here treated, in that the underparts with the exception of the white throat, are densely barred with dull brown on a white background. Wings pointed, wing tip in males 49-56, in females 55-66 mm, or c. 30-32% of wing length. Under wing strongly barred. Tail relatively short. Dark median streak on the white throat variable, almost absent in some specimens, distinct in others, a variation that shows no obvious relation with age or sex.

In the immature plumage this species may be distinguished from *A. virgatus* in having the underparts less strongly marked. In *A. virgatus* the spots are strong on the lower abdomen, where they are less conspicuous or almost absent in most specimens of *A. gularis*. Moreover, in the former the markings are usually darker, and provided with rusty



(1) *A. v. virgatus* ♂ ad.; (2) *A. v. virgatus* ♀ ad.; (3) *A. g. guttularis* ♂ ad.; (4) *A. g. guttularis* ♀ ad.; (5) *A. g. guttularis* ♀ im.; (6) *A. g. guttularis* ♀ ad. The nos. 5 and 6 show the opposite extremes in development of the gular stripe as found in a large series.

edgings; the sides of the breast are tinged with rust colour. In *A. gularis*, on the other hand, all markings are of a uniform and rather dull brown.

Habitat. The nominate race is in summer an inhabitant of mixed forests and deciduous forests of the cool-temperate region. In the winter quarters it is found in all kinds of semi-open and wooded country, not only in the lowlands, but also at higher elevations. Material in our collection is singularly devoid of indications of altitude, although some of the localities of collecting are suggestive even without them. In Java, Hoogerwerf (1948: 123) considered it to occur at all levels, but rare or absent above 2500 m. The habitat of *A. g. iwasakii* will be discussed separately.

Geographical variation. There are two well-marked subspecies, the widely distributed *A. g. gularis* and the insular *A. g. iwasakii*, confined to two small islands in the Riu Kius. The two are so different that a strong case could be made for the view that they are distinct species, see the discussion of *A. g. iwasakii* given on a later page.

In the literature one frequently finds reference to *Accipiter stevensoni* Gurney (1863), a name based on two specimens: one from Macao and one from Tientsin (rather than Peking). In the original description no mention is made of *A. gularis*, with which evidently it was not compared. Later authors have usually regarded the name as a synonym of *A. gularis* (cf. Ogilvie-Grant 1896, Hartert 1914: 1161, etc.), but from time to time attempts have been made to recognize it as a subspecies. Apparently Baker (1928: 163) was the first to revive it, in the combination *A. gularis stevensoni*; compared with *A. g. gularis* he claimed it to be: "distinctly paler, both in the male and the female, most notice-

ably on the lower plumage". This was accepted by La Touche (1932: 195) and with some doubt by Peters (1931: 223), who introduced the trinomial *A. virgatus stevensoni*. Note that the breeding ranges given by the mentioned authors for the two alleged subspecies are more or less the same; for *A. v. gularis* it is: "northern China and Japan", for *A. v. stevensoni*: "Manchuria to northern China"; note also that there is no mention of the main breeding range of *A. gularis*, which is in Siberia. Voous (1950: 97) stated: "I am of the opinion that the Chinese breeding birds ... must be recognized as a separate race (*stevensoni* Gurney, 1863) from the Japanese form (*gularis* Temminck & Schlegel, 1844) on account of the conspicuous paleness of the underparts in males [2 breeding males from Kwantung (Berlin Museum) and one from Shantung (Leiden Museum) examined]. Females do not seem to be different. In the series of wintering males from Malaysia the two types of coloration are apparent, hence the pale males are supposed to originate from China (or Manchuria) and are tentatively referred by me to *A. v. stevensoni*. The male type specimen of *Astur (Nisus) gularis* Temminck & Schlegel from Japan was examined in the Leiden Museum; it has rather dark rufous brown under parts". In this long quotation there is a lot that requires elucidation. Firstly, it is obvious that the types of *A. stevensoni* must have been migrants as *A. gularis* is not known to breed in China proper. To the "breeding males" from Kwantung and Shantung on which Voous based his opinion the same pertains. The Shantung specimen is a mounted bird in our old collection from Chefoo, May 1873 (without exact date), leg. R. Swinhoe, received under the name *A. stevensonii*, an identification presumably made

by its collector. Swinhoe (1874: 432) himself regarded at least the great majority of the birds as migrants from Korea and Manchuria, although he left open the possibility of occasional breeding near Chefoo (for which he was unable to produce any evidence). Subsequent observations, summarized by LeFevre (1962: 31) have confirmed that *A. gularis* does not breed near Chefoo. I would not describe the underparts of the male type specimen of *A. gularis* (RMNH cat. no. 1) as "rather dark rufous brown"; actually they are only a trifle richer in colour, particularly on the sides of the breast, than in the Chefoo specimen and both fit well in the not overlarge range of variation found in material from the winter quarters. When Voous wrote his article, the presence of a breeding population in Japan had still to be confirmed; although now this confirmation has been obtained, it is probably more common as a migrant, and whether the type-specimens of *A. gularis* belonged to a resident population is anybody's guess. Probability is against it. None of the authors who recognized *stevensoni* could have examined the beautiful coloured plate accompanying the description of *A. stevensoni*, for it shows a bird which certainly is very rich rufous underneath, of a far deeper, not paler, colour than the male type of *A. gularis*.³ The only species with which *A. stevensoni* was actually compared in its original description, is *A. rhodogaster*. Gurney (1863) remarked that the colouring of

the breast was much paler in *A. stevensoni* than in *A. rhodogaster* and in the minds of subsequent workers this remark may somehow have become transposed to *A. gularis*, leading to the belief that *A. stevensoni* was a particularly pale bird. As already mentioned above, the individual variation in colour of the underparts in specimens collected in the winter quarters is not large, and there is no evidence of bimodality in this variation which would be suggestive of different subspecies. It is true that from this generalization one specimen has to be excluded: ♂ ad., 12.ii.1917, Batoetoelis near Buitenzorg (RMNH cat. no. 53); this bird has the underparts a deep cinnamon, practically unbarred; in the colour of its undersurface it is extremely similar to adult females of *A. soloensis*. Evidently the question as to whether or not the populations of *A. gularis* from continental Asia and Japan show any geographical variation can only be answered when identified breeding birds are compared.

It is true that according to Stepanyan (1959) birds from the western part of the breeding range show a clinal tendency to larger size, whereas in females the cross-bars on the under surface would be a little narrower and wider apart. In my opinion these average differences hardly justify recognition of a separate subspecies (*A. virgatus sibiricus* Stepanyan) and in the winter quarters even the distinction of extreme individuals would be practically impossible. For this reason I have not further considered the name *sibiricus*.

Discussion. Whether or not *A. virgatus* and *A. gularis* are conspecific is still a point of controversy in literature. Following Stresemann (1923), in a majority of recent publications *gularis* has been treated as a subspecies of *virgatus*, but Vaurie (1965: 165 footnote) stated: 'This hawk is often considered to be

³ Surprisingly, the specimen from Paking/Tientsin kept as type (BM no. 1955.6.N.20.2763, cf. Warren 1966: 282), which one would presume to be the figured bird, actually is rather pale, slightly paler than the three males from Japan in the BM collection, and shows other differences from the plate. It is not clear what has happened (Galbraith, *in litt.*, 4.vi.1979).

conspecific with *A. virgatus* but it is very distinct from it morphologically and appears to be a distinct species related to *A. virgatus* and *A. nisus*". The breeding range of *A. gularis* as circumscribed by Vaurie overlaps extensively with that of *A. virgatus* in southern China (Kwangtung, Kwangsi) and Formosa, and this may have contributed to his decision to treat them as different species (cf. Mees 1970: 291, Wattel 1972: 27 and 1973: 42). Since then it has, however, become evident that the records on which this was based concern migrants and that in fact the breeding ranges of *A. virgatus* and *A. gularis* are widely separated, except for the peculiar occurrence of an endemic subspecies *A. gularis iwasakii* on the two southernmost Riu Kiu Islands (Ishigaki and Iriomote), adjacent to Formosa where *A. virgatus fuscipectus* lives. As a consequence, I considered the problem of the status of *A. gularis* to be open to discussion again, and I considered it prudent not to take a definite stand either way.

In the course of studying *A. g. gularis* I have, like Vaurie and others before me, become increasingly impressed by the differences it shows from *A. virgatus*. These include the considerable sexual dimorphism in plumage, the smaller sexual difference in size, the shape of the wing, the relatively shorter tail, the somewhat smaller bill, the relatively shorter tarsus. Apart from morphological differences, ecological differences deserve also to be taken into consideration: *A. gularis* appears to inhabit (certainly in its winter quarters) a more open habitat than *A. virgatus*; whereas the latter is a sedentary inhabitant of tropical forests, where admittedly it ranges into the cooler montane zones, the former is as a breeding bird confined to the temperate regions, and is strongly migratory. All this led

me to the conclusion that the relationship between *A. virgatus* and *A. gularis* is far more remote than most recent authors believe it to be; it is not only that I regard them as different species, but I am not even convinced that they are particularly close to each other. Thus my views came to be very close to those of Ogilvie-Grant (1896: 105), expressed eighty years earlier, and quite different from those of Stresemann (1923) whose article has strongly influenced later workers but was rather superficial.

In the above summary of characters distinguishing *A. gularis* from *A. virgatus*, the form *A. g. iwasakii* has been left out on purpose, for it completely spoils the picture. It shows no sexual dimorphism in plumage, the shape of the wing is similar to that of *A. virgatus*, bill and tarsus appear to be larger than in *A. g. gularis*. Ecologically it agrees with *A. virgatus* in that it is a sedentary inhabitant of a humid near-tropical habitat (cf. tables giving temperature, humidity and precipitation on Ishigaki, published by Hachisuka & Udagawa 1953: 146). Here we come on the old problem of which characters are indicative of true relationship, and which ones are merely due to convergence. On the other hand a hopeful point is that the adult plumage of *A. g. iwasakii* is similar to the female plumage of *A. gularis*, and shows no resemblance whatsoever to that of *A. virgatus*. There is, of course, no need to point out here that the fact that characters are adaptive, does not necessarily invalidate them for studies of relationships as it can safely be argued that all characters are adaptive and some, like wing-shape, are only more obviously so than others. All characters add to the general distinctiveness of a form and may contribute to a judgement about its status in relation to other forms. More about

the systematic position of *A. g. iwasakii* will be said in the discussion of that subspecies.

In the evaluation of the specific diversity of *A. virgatus* and *A. gularis* account should also be taken of the fact that in the only area where their ranges approach each other closely and under rather similar climatological conditions: Formosa and the southern Riu Kiu Islands, the two most diverse subspecies of each occur. Formosa is inhabited *A. v. fuscipectus*, largest member of the species *A. virgatus*, and the southern Riu Kiu Islands are inhabited by the smallest subspecies *A. g. iwasakii*, which is roughly of the size of *A. v. besra*, and much smaller than adjacent *A. v. fuscipectus*.

Wattel (1973: 43), who treated *A. virgatus* and *A. gularis* as conspecific, speculated: "The distribution and the habitat of *gularis* point to an Oriental origin. After having become isolated in the Himalayas and adjacent mountains, the ancestors of *A. virgatus* recolonized the eastern parts of the Palearctic and differentiated into the present form *gularis*. This may have happened during one of the earlier Pleistocene interglacials. Several other Oriental birds of prey penetrate the eastern Palearctic in a similar way...". In this quotation there is one point I do not understand, and that is why the habitat of *A. gularis* should point to an Oriental origin. As regards Wattel's speculation about the origin of *A. gularis*, it will be evident that this can only be valid when one assumes that *A. gularis* and *A. virgatus* are closely related and that the former is an offshoot of the latter. But it is exactly this assumption which I believe to be highly questionable.

Accipiter gularis gularis (Temminck & Schlegel)

Astur (Nisus) gularis Temminck & Schlegel,

1844, Fauna Japonica, Aves: 5, pl. II—Japan.

Material from the Andamans. ♂ im., 14.ii.1964, Wimberleyganj, South Andaman, leg. H. Abdulali (BNHS no. 21895).

Material from the Nicobars. ♀, 27.iii.1966, Camorta, leg. H. Abdulali (BNHS no. 22581).

Material from Continental India. Sex not recorded (= ♀ im.), undated, Mhow, ex coll. Whately (BM no. 75.6.24.15); ♂, 16.x.1971, Point Calimere, leg. BNHS party (BNHS no. 23926); sex not recorded (= ♀ im.), undated, Point Calimere, leg. BNHS party (BNHS no. 23700).

Distribution in India. Hitherto *A. gularis* had only been recorded from the Andamans and Nicobars. Salomonsen (1953) published details of a specimen captured at sea in the Bay of Bengal, c. 10°N., 90°E., 250-300 km W. of Little Andaman, in the same general area. The specimens listed here constitute the first records from Continental India and their collecting localities indicate that this species may perhaps be found as a scarce winter visitor throughout India. Some caution is, however, necessary in the case of the specimen from Mhow as it has no original collector's label and bears no date; it was provided by Whately who was a taxidermist and trader (cf. Sharpe 1906: 510). Therefore it seems to me that the provenance Mhow given on its label is not entirely above suspicion.

Distribution. As a breeding bird this subspecies appears to be confined to the temperate regions of Central and East Asia. For its distribution in the Soviet Union see Flint *et al.* (1968: map 52) and for its whole breeding range Wattel (1973: map 4). In the eastern part of its breeding range it seems to be uncommon; in Korea it is described as a scarce summer visitor (Gore & Won 1971: 163). Until recently, breeding in Japan was

considered to be very doubtful (Austin & Kuroda 1953: 376), and Wattel still provided the whole of Japan with a great query, but there are now breeding records from all three main islands: Hokkaido, Honshu and Shikoku (Ornithological Society of Japan 1975: 67).

The distributional map published by Cheng (1976: fig. 68) illustrates clearly how wide the geographical gap is in China between the breeding ranges of *A. gularis* and *A. virgatus*, the former being almost confined to Manchuria. This is confirmed by other literature, for example Shaw (1936: 234), who as far north as Hopei knew *A. gularis* as a migrant visitor only, passing through in May and September-October. It is true that Fu (1937: 38) claimed breeding in the mountains of Fou-Niou and Son-Chan in Honan, but from the context it is not clear that he has considered the possibility that the nests could have belonged to *A. soloensis*, a species that ought to occur in Honan but is not mentioned by Fu.

It has been assumed by a majority of authors that *A. gularis* occurs as a breeding bird throughout eastern China, to as far south as Kwangtung, Kwangsi and Formosa (Vaurie 1965: 165, Brown & Amadon 1968: 468 and map 37, Etchécopar & Hüe 1978: 150), where it was supposed to co-exist with races of *A. virgatus*. The matter was discussed in considerable detail by Wattel (1973: 42), who concluded that all records of breeding in southern and eastern China are based on late migrants and on misidentification. Previously I had postulated the same for Formosa (Mees 1970: 291). Cheng's map supports this.

A. g. gularis is strongly migratory, occurring in winter in some numbers to as far south as Sumatra with its satellite islands, Java and the Lesser Sunda Islands (Flores, Timor). Unlike *A. soloensis* it does not go far east; it has

only once been recorded from the Celebes and is unknown from the Moluccas.

Discussion. The fact that breeding records from the Andamans are due to confusion with *A. virgatus abdullalii* has been made clear on a preceding page. Ali & Ripley (1968: 250) further wrote under the heading *A. virgatus gularis*: "Occurs in the Nicobars; probably breeding, but status unconfirmed". The specimen listed here is the only one known from the Nicobars (Abdulali 1967: 155). Note in this connexion that Brown & Amadon (1968: 523) make under *A. butleri* the following statement: "The only small sparrow-hawk occurring in the Nicobars, hence unmistakable"; this is misleading as actually three species of similar size are now known from the group (*A. butleri*, *A. gularis* and *A. soloensis*). Admittedly *A. butleri* is the only resident but evidence is that in winter it is outnumbered by *A. soloensis* and perhaps also by *A. gularis*. Moreover the two migrant species may be expected to occur on all islands of the group whereas on present evidence *A. butleri* is confined to Car Nicobar and Katchal.

Brown & Amadon (1968: 468) gave for *A. gularis*, with which the nominate subspecies is meant (they overlooked *A. g. iwaskii*) a wing length of ♂ 160-187, ♀ 167-198 mm (numbers of specimens not mentioned). The measurements taken by me show a much smaller variation of each sex but a much more pronounced difference in size between the sexes (see tables I and II). The figures published by Hartert (1914: 1162): 24 ♂ 164-171, 15 ♀ 184-195, by Swann (1926: 329): ♂ 163-170, ♀ 184-200 mm (numbers of specimens not recorded), by Voous (1950: 97): 15 ♂ 159-172, 21 ♀ 180-197 mm, and by Wattel (1973: 37 tab. 14): 32 ♂ 158-174 (average 165.9), 21 ♀ 180-197 (average 189.1) mm, agree with mine.

I must assume that Brown & Amadon have measured a large number of wrongly sexed specimens. Their tail lengths show a similar over-large range of variation: ♂ 117-137, ♀ 111-143 mm.

A combination of the dated material in Leiden and Bombay shows that this species begins to arrive in its winter quarters in October and stays until late April and early May.

MONTH	VIII	IX	X	XI	XII	I	II	III	IV	V
RMNH	—	—	6	10	10	8	9	10	4	2
			1				1	1		

The earliest autumn date is 4.x.1921 (Pangerango, Java, leg. Bartels, RMNH cat. no. 58), the latest spring dates are 9.v.1925 (Rembang, Java, leg. Sody, RMNH cat. no. 30), May 1912 without exact date (Medan, Sumatra, leg. de Bussy, RMNH cat. no. 21). The four birds collected in April are from 16, 18, 21 and 23 of that month (all Java). Compare this with the data from the Malay Peninsula, summarized by Medway & Wells (1976: 107).

Voous (1950: 106), who considered *A. gularis* and *A. virgatus* to be conspecific, made in the discussion of *A. gularis* the enigmatic statement: "These birds are less closely related to the Malaysian breeding birds than are the Philippine and Burmese races. They are probably rather close relatives of the North American Sharp-shinned Hawk (*Accipiter velox*), whereas the S. E. Asiatic breeding birds represent a more primitive stage". The suggested relationship between *A. gularis* and *A. striatus* (of which *velox* is a subspecies) has already been discussed and rejected by Wattel (1973: 114), so that there is no need for me

to cover that ground again, but what I do not understand in the quotation from Voous given above, and nevertheless read in it, is that the form he calls *A. virgatus gularis*, and therefore regards as a subspecies of *A. virgatus*, would be more closely related to *A. velox* than to *A. v. virgatus*. Surely there is a contradiction here between the opinion he airs and the nomenclature he uses? I also fail to understand why *A. virgatus*, a specialized bird hunter of the tropical forest, should be called 'primitive', a word that without a lot of explanation is meaningless.

Accipiter gularis iwasakii Mishima

Accipiter virgatus iwasakii Mishima, 1962, Tori 17: 219—Ishigaki and Iriomote, southern Riu Kiu.

Material. ♂ ad. (originally mis-sexed as ♀), 28.v.1904, Omoto-Dake, Ishigaki, leg. Owston's Japanese collector (AMNH no. 533881); ♀ ad., 6.vi.1904, Kawara-yama, Ishigaki, same source (AMNH no. 533880).

Distribution. Endemic to Ishigaki and Iriomote, southern Riu Kiu Islands.

Characters. Sexual difference in size about the same as in *A. g. gularis*, but contrary to that form there is little or no sexual difference in plumage: the adults of both sexes have a plumage very similar to that of female *A. g. gularis*, but the cross-bars on the undersurface are a little paler, greyer, less brownish. Wings shorter and more rounded than those of *A. g. gularis*, resembling in shape those of *A. virgatus*, as is also clear from the length of the wing tip (see table). Tail not shorter than in *A. g. gularis*, and the feet, if anything, appear to be a trifle heavier than in that subspecies. Viewed from above, the female has six bands

on the tail, of which four are free, one is partially visible behind the upper tail-coverts, and one is entirely concealed. All specimens of *A. g. gularis* which I examined for this character have five bands. Dark mesial streak on throat as in the nominate race.

Habitat. To my knowledge no field notes have ever been published, but from its morphology and its localities of collecting it may be safely deduced that *A. g. iwaskii* is a forest bird.

Discussion. The knowledge that *A. gularis* has a resident population on Ishigaki dates from Bangs (1901: 263), who recorded a downy nestling collected on 27.vi.1899. The information about breeding was repeated by Hartert (1914: 1162), who, without referring to Bangs, wrote: "Auf der Insel Ischigaki (südliche Riu-Kiu-Gruppe) brütet diese Art und ist dort Standvogel; ein ♀ hat den Flügel nur 183, 3 alte ♂ nur 160-165 mm, auch sind letztere unterseits sehr stark gebändert; vermutlich handelt es sich um eine Unterart, aber einzelne Zugvögel aus den Tropen kommen dieser Form so nahe, dass sie nach dem Vorliegenden Material nicht zu benennen ist". Hartert failed to state on what his opinion that *A. gularis* was a resident on Ishigaki was based, but probably he combined the breeding record published by Bangs with the fact that specimens had been collected in various seasons. In all subsequent literature, the occurrence of *A. gularis* as a resident in the southern Riu Kiu Islands has been accepted and therefore it is surprising that no further study of this isolated population was made for another fifty years when finally Mishima (1962) described it as a separate subspecies. Although this subspecies was accepted by such critical authors as Wattel (1973: 37), Morioka (1974)

and the Ornithological Society of Japan (1975: 67), I am unaware that it has been either observed in the field or studied in the museum since its description.

The fact that zoogeographically an endemic subspecies of *A. gularis* on Ishigaki and Iriomote is unexpected, made me wonder if the evidence was really as strong as it seemed. The most convincing piece of evidence would clearly be the downy nestling; if it was correctly identified, it would provide unassailable proof. As Bangs (l. c.) is singularly uninformative about how the nestling was identified, and whether it was actually associated with an adult bird, it seemed worth enquiring with the Museum of Comparative Zoölogy. Dr. Paynter was so kind to re-examine the specimen for me; he reported that it is definitely an *Accipiter*, but that it is too young for specific identification; indeed, somebody had provided the name *A. gularis* given on the label with a great query. However, as no other species of sparrow-hawk is known to occur in the Riu Kiu Islands, it may safely be assumed that the pullus actually is *A. g. iwaskii*. Anyway, all my doubts ended when I got an opportunity to examine specimens from Ishigaki.

The evidence for the occurrence on Iriomote, poorly documented in the consulted literature, rests on an adult female and a downy young in the Yamashina Institute, collected together on 5.vii.1936 (Yamashina, *in litt.*, 7.vi.1979).

Small as the sample of *A. g. iwaskii* was, it shows some conspicuous differences in proportions from the nominate race (see table). Previous authors (Hartert) have noted that it is a trifle smaller, but also the tail is relatively longer. It seemed of interest to investigate whether the tail is actually longer, or that the

difference is due to the wings of *A. g. iwaskii* being relatively shorter. For the sake of convenience I compared specimen BNHS no. 22581 of *A. g. gularis* with specimen AMNH no. 533880 of *A. g. iwaskii*, both of which have a tail of 132 mm, but the wing length of the first specimen is 192 mm, that of the second specimen 181 mm, resulting in a tail/wing index of 68.8% in the former, 72.9% in the latter. However, if we take off the wing tip (58 mm in the first specimen against $46\frac{1}{2}$ mm in the second), the remaining wing length of the first specimen is $192 - 58 = 134$ mm, of the second $181 - 46\frac{1}{2} = 134\frac{1}{2}$ mm, hence virtually identical. This strongly suggests, not unexpectedly, that the shift in wing/tail ratio between the two subspecies is due to the shorter more rounded wing of *A. g. iwaskii*. This also shows that the structural differences between the two subspecies are not, after all, so very great. The more rounded wing of *A. g. iwaskii* is an adaptation to a sedentary way of life, of a kind common to many species of birds and therefore of limited phylogenetic significance. However, as I have stressed on a previous page, it is of some significance. It will certainly have taken *A. g. gularis* and *A. g. iwaskii* many generations to have become as different in wing shape as they are now. There is always a temptation to use certain characters when they happen to fit into one's theories, and to reject them as insignificant when they do not. Although it is perhaps no longer fair to criticize a paper over fifty years after its publication, it is still relevant to the problem here discussed to recall that Stresemann (1923: 517) used the agreement in wing formula between *A. soloensis* and *A. brevipes* as evidence for their close relationship, and proceeded to call a difference in wing formula "ein unwesentliches Merkmal", to be able to

unite both with *A. badius*.

As will be clear from the discussion given above, I started off with a strong mistrust of this form, the main reasons for this being that *A. g. gularis* is known to be a late migrant so that specimens collected in late May and early June could still have been on their way back to the breeding grounds in eastern Siberia, that the islands Ishigaki and Iriomote are not only remote from the breeding range of *A. g. gularis* but also far more southerly, and that one would not expect an endemic form on these two islands but absent from the larger central group of the Riu Kius. All these prejudices proved mistaken when I examined material, for actually *A. g. iwaskii* is far more distinctive than literature had made me believe. Although Hartert (as quoted above) noted the cross-bars of a male bird, Mishima's (1962) description is based on wing formula and size only; no mention is made in it of colour characters and of the wing tip. Its geographical, morphological and colour characters combined, make *A. g. iwaskii* about as distinct from *A. g. gularis* as *A. butleri* is from *A. badius*. *A. g. iwaskii* and *A. butleri* have, through convergence, several points in common: both are strongly modified isolates, confined to a few small islands, both have shorter and more rounded wings as well as somewhat larger and heavier bill and feet than the species from which they are assumed to have been derived, perhaps both lack sexual dimorphism in the adult plumage (I have not examined *A. butleri*, but in the literature only one adult plumage has been described). Since *A. butleri* is nowadays usually treated as a separate species, although there is agreement that it has been derived from *A. badius*, it would be consistent to treat *A. g. iwaskii* also as a species rather than as a subspecies of *A. gularis*. I

have not done so because, in spite of the differences, there is a lot of agreement between *A. g. gularis* and *A. g. iwasakii* in general proportions, plumage of the female, etc., but mainly because, whatever its exact status, *A. g. iwasakii* is clearly a derivative of *A. gularis*, and in the framework of this paper it is convenient to express this relationship in nomenclature. As regards its true status, which must remain speculative anyway, I would be inclined to regard it as a separate species.

According to Wattel (1973: 43): "The occurrence of a population on the southern Riu Kiu Islands which is most closely similar to Palaearctic *gularis* can be understood by supposing that a group of migrants of the northern form settled in these islands". It is perfectly possible that this interpretation is correct, but *A. g. iwasakii* could equally well be a glacial relict, dating from a period that the main range of *A. gularis* was farther south than at present. In either case, its morphological peculiarities prove that *A. g. iwasakii* has been isolated for a long time.

ACCIPITER BADIUS (GMELIN)

Material examined. Small series of the subspecies *A. b. badius*, *A. b. dussumieri* and *A. b. poliopsis*. The available specimens of *A. b. dussumieri* were nearly all from our old mounted collection, without other data than vague indications of provenance: "Inde", "Hindoustan", "Bengale".

Distribution. Ethiopian Africa, southern and south-eastern Asia. In Asia ranging from eastern Transcaucasia right across to southern China. Occurs in Sri Lanka, but not in the islands to the south-east and east of the Asiatic mainland, except as an uncommon migrant to Formosa and Sumatra. In India generally dis-

tributed throughout the lowlands and the lower montane regions with an upper limit of c. 1500 m in India (Ali & Ripley 1968: 236), or at least 1800 m in Ceylon (Whistler 1944: 249).

Characters. The distinctive characters of this species (all subspecies occurring in south-eastern Asia) can be summarized as follows. Differs from *A. virgatus* by its much more pointed wings; wing tip in males 50-63 mm, in females 58-65 mm, against 35-43 mm in males and 41-52 mm in females of *A. virgatus* from India (three subspecies combined). From *A. gularis* this species differs in all plumages by having, sex for sex, longer wings although there might be marginal overlap in large series; by having larger and heavier bill and claws, and a conspicuously longer tail.

Adult specimens of either sex rarely cause identification problems. The comparatively light grey upperparts, the absence of distinct bands on the central rectrices, apart from a subterminal one, and the pattern of cross-bars on the breast are quite distinctive. Only in the last-mentioned character is there some variation that might lead to misidentification. Usually the cross-bars are vivid brown, close together, but in some specimens they tend to be less marked and more pinkish in colour, and such specimens can show a superficial resemblance to certain adult males of *A. gularis* (but the back and tail pattern are always different).

Geographical variation. In southern and eastern Asia the following subspecies are currently recognized: *A. b. cenchroides* (south-western Asia eastwards to northern Pakistan), *A. b. dussumieri* (the greater part of India), *A. b. badius* (Sri Lanka, and perhaps the extreme south of India), and *A. b. poliopsis* (from Assam and Burma eastwards). The position

of the populations in southern India has not been definitely settled; usually they have been referred to *A. b. badius*, but Whistler (1944: 248) observed: "Travancore birds are really intermediate between *badius* and *dussumieri* but on the whole it is best to include them with the former", whereas according to Abdulali (1969: 701) they agree better with *A. b. dussumieri*. At least some of the subspecies are migratory: *A. b. cenchroides* has been recorded in winter from north-western India (Ali & Ripley 1968: 235) and Bombay (Abdulali 1969: 700), whereas *A. b. poliopsis* is a scarce winter visitor to the northern Malay Peninsula (Medway & Wells 1976: 105) and reaches Sumatra from where three specimens are known (cf. Junge 1948: 319), all three of which I have examined. I have not studied the geographical variation of *A. badius*, being concerned with its specific characters only, but further study at the subspecific level might be rewarding.

Discussion. *A. badius* had to be included in this paper as in its immature plumage it has so often been confused with *A. virgatus* and *A. gularis*. The synonymy given by Deignan (1945: 63-64), for example, shows that in northern Thailand alone, *A. badius* has been recorded under the names *A. gularis*, *A. tri-virgatus indicus* (!), *A. gularis nisoides* and *A. virgatus nisoides*. In continental India also, this species has been consistently confused with *A. virgatus*.

ACCIPITER SOLOENSIS (HORSFIELD)

Falco Soloënsis Horsfield, 1821, Trans. Linn. Soc. Lond. 13: 137—Java (by inference Solo).

Material from the Nicobars. ♀ juv., 25.ii.1858, Car Nicobar, leg. J. Zelebor, Novara

Exp. (MV no. 71222).

Distribution in India. Known as a winter visitor to the Nicobars. Records from the Andamans are erroneous (see Discussion).

Distribution. As a breeding bird known from Korea, where it is common and widely distributed (Gore & Won 1971: 160-163), and the greater part of China, west to Szechwan, south to Kwangtung. In view of the common occurrence in Korea and the fact that this species has even been found in Russian territory (Labzyuk *et al.* 1971: 58, Nazarov & Labzyuk 1975: 271) the map in Cheng (1976: fig. 65) in which it is shown as confined to the southern half of China appears too restrictive, although it is true that there is no actual proof yet of breeding in northern China and Manchuria and that the number of records is surprisingly small. Supposed breeding in Formosa (Hachisuka & Udagawa 1951: 97, Vaurie 1965: 164) remains unconfirmed (cf. Mees 1970: 286, Wattel 1973: 30). Strongly migratory and in winter found to the limits of an arc extending from the Nicobars in the west, over the Greater and Lesser Sunda Islands and the North Moluccas, to islands off the western tip of New Guinea.

Characters. Of the species here dealt with, *A. soloensis* is the least likely to cause confusion. It is characterized by having little sexual dimorphism, either in size or in plumage, a very long wing tip (the difference between the longest primary and the tenth being 68-75 mm, or 35.6-38.8% of the wing length in 21 specimens), a comparatively short middle toe, and in the adult plumage an underwing pattern almost devoid of barring: seen from below the outer primaries are dark grey or black, the remainder of the wing is white or pale buffish, with at most a few dark spots. All other species here dealt with have the

primaries and much of the underwing distinctly barred. There are a few thin grey lines on the white throat, often forming a narrow dark median stripe.

Sexual dimorphism in plumage is comparatively slight, but is not entirely absent. Adult females have the chest, lower chest and flanks a rich cinnamon. Some adult males come near them, but most males have the underparts conspicuously paler, more pinkish.

Discussion. *A. soloensis* was recorded from the Andamans by Ripley (1961: 46), Ali & Ripley (1968: 239-240) and finally by Wattel (1973: 30) but apparently mistakenly (see also Abdulali 1969: 702). The error originated probably with Baker (1928: 153) who did not include the Andamans in the range as given under the heading 'Distribution', but under 'Habits' observed: "Hume saw it in the densest forests in the Andamans". In the published works of Hume I have been unable to find any evidence that he ever observed *A. soloensis* in the Andamans, nor, indeed, in the Nicobars (cf. Hume 1874: 141) and I suspect that Baker has misquoted Hume's remarks about the specimen collected in the Nicobars by Zelebor of the Novara expedition.

In the Nicobars, *A. soloensis* has long been known. A specimen was collected on Car Nicobar as long ago as February 1858 and was reported in print a few years later (cf. Pelzeln 1865: 12). It is true that Richmond (1902: 307) questioned the identification of the specimen, an immature female, and speculated that it belonged to *A. butleri*, a species not yet described when Pelzeln's paper was published. Other authors have copied this. Since the point had to my knowledge never been verified, I re-examined the specimen and found that its original identification was perfectly correct. Why Richmond should have doubted this is

not clear anyway as he himself recorded a series of no fewer than twelve specimens of *A. soloensis* taken on Katchal, Great and Little Nicobar. Dr. Watson has been so kind as to re-examine these specimens for me and to confirm (*in litt.*, 3.viii.1978) that they had been correctly identified. The large number of individuals taken in the Nicobars makes it evident that it will be only a matter of time before this migrant is also recorded from the Andamans.

It is relevant to mention that *A. soloensis* is known from the island of Nias, to the west of Sumatra, the history of the record being as follows. Büttikofer (1896) listed a sparrowhawk from Nias under the name *Astur poliopsis* (Hume). Chasen (1935: 71 footnote 2) commented: "Büttikofer's '*poliopsis*' from Nias is stated to have the cere yellow and is therefore probably *A. soloensis*". On this basis he included Nias in the winter range of *A. soloensis*. Ripley (1944: 323) did not agree: "Chasen lists this species from Nias on the basis of Büttikofer's record of *Accipiter poliopsis*. From the description of the specimen, however, it is impossible to be sure that he did not have a specimen of *poliopsis*". Therefore Ripley restored *A. badius poliopsis* to the Nias list and removed *A. soloensis* from it. Examination of the specimen in our collection revealed that actually Chasen's guess was right: the specimen is undoubtedly referable to *A. soloensis* (♀ ad., 20.xi.1895, Hili Madjeio, Nias, RMNH cat. no. 50). It is perhaps well to add here that the specimen recorded by Büttikofer (l. c.) as *Accipiter virgatus*, is *A. gularis*.

Wattel (1973: 30) states of this species that it is: "Particularly numerous in northern Celebes and not uncommon in eastern Java". This more or less suggests that in western

Java it is uncommon. Our collection contains 129 specimens of *A. soloensis* from Java, of which six in the old collection have no exact locality and eleven are from East Java, so that there are 112 specimens from West Java. This should be compared with the numbers of *A. gularis* and *A. virgatus* given on a preceding page.

The available material is large enough to give some insight in the duration of the stay in the winter quarters. Divided over the different months we get the following numbers:

MONTH	VIII	IX	X	XI	XII	I	II	III	IV	V
RMNH	1	1	18	36	25	23	27	8	1	—
MV							1			

The earliest dates are I.viii.1861 (Morotai, leg. Bernstein, RMNH cat. no. 58) and 22.ix.1863 (Negri-Lama, Celebes, leg. Rosenberg, RMNH cat. no. 18), whereas the last date in spring is 15.iv.1925 (Koeningan near Cheribon, Java, leg. F.C. van Heurn, RMNH cat. 51). The August date is so remarkably early that Hartert (1914: 1163) expressed doubt about it: "Ein Stück im Leidener Museum soll am 1. August auf Morty erbeutet sein". Although the specimen is mounted and lacks a collector's label, there seems to be nothing wrong with it. Schlegel (1873: 98) already listed it with this date. Compare the above table with that given on a preceding page for *A. gularis*: whereas the dates of arrival in autumn are not very different, *A. gularis* stays longer in spring. Presumably this is connected with its more northerly breeding quarters.

Brown & Amadon (1968: 514) state that in this species females are larger than males. Although this is correct, the difference is slight and unlike most other species of the genus,

it is quite impossible to distinguish the sexes by size alone. The wing-lengths provided by Brown & Amadon are ♂ 185-201, ♀ 200-209 (number of specimens not given) and suggest almost complete segregation, with an overlapping of only 1 mm. The averages found by me in 10 ♂ ad. and 11 ♀ ad. (see table) are 189.0 and 194.1 mm respectively. The averages recorded by Wattel (1973: 31) are 13 ♂ 186.8 and 11 ♀ 195.5 mm, not very different from mine. Note that the size-ranges found by Wattel and by me correspond closely, but that the measurements provided by Brown & Amadon are decidedly larger, especially for the females; their figures were probably copied from La Touche (1932: 189-190) and consultation of that author's work revealed that his figures were based on very few specimens. The number of males is not given, but the female variation was based on three specimens with wings of 200, 200 and 209 mm. Assuming that all La Touche's specimens were correctly identified, and his descriptions look convincing, it seems that he happened to have one exceptionally large individual, or perhaps it is just a difference in method of measuring that is responsible for the large wing-size of his specimens, compared with the larger number measured by me. In order to obtain a better insight in the range of variation possible, I measured the wings of all the females, adults as well as juveniles, in our collection, 53 specimens altogether, and found as maxima for the wing length 202, 203 and 204 mm. All other specimens had a wing length of less than 200 mm.

THE IDENTITY OF *Accipiter nisoides* BLYTH

The name *nisoides*, in a subspecific sense, has been used for the Andaman breeding birds

by such influential authors as Baker, Peters and, albeit with some doubt, by Wattel (1973). Therefore the name *Accipiter nisoides* deserves a close scrutiny to decide whether it is applicable to the Andaman breeding population, and more generally, what its identity is.

The type specimen was collected in the vicinity of Malacca by R. W. G. Frith, and presented to the museum of the Asiatic Society. It was described as follows (Blyth 1847): "*Acc. nisoides*. Presumed female in mature plumage differing only from that of *Acc. nisus* (common to Europe and India), in its much inferior size, being smaller than the male of *Acc. nisus*; and in having the throat streakless white, excepting a narrow median dark line; the usual lateral lines occur, but not conspicuously, bordering the ear-coverts beneath, which are observable in various other species of Hawks, Eagle-Hawks, & c. Length of wing $7\frac{1}{4}$ inches, of tail $5\frac{1}{2}$; tarse $1\frac{3}{8}$ inch; middle toe and claw $1\frac{1}{2}$ in."

Blyth (1866: 240) himself withdrew the name: "When writing the foregoing remarks I had not the 'Fauna Japonica' at hand. Now that it is before me, I recognize in the figure of the female *A. gularis* an exact representation of my *A. nisoides*". A few years later Blyth (1870: 158) unexpectedly retained *A. nisoides*, placing *A. gularis* in its synonymy. *A. gularis* Temminck & Schlegel (1844) has, obviously, clear priority over *A. nisoides* Blyth (1847). In those years, however, British ornithologists appear to have laboured under the misconception that *A. gularis* was published in 1850 (see for example Sharpe 1874: 151). Therefore this change did not mean a change in Blyth's conclusion that both names referred to the same species.

The synonymy given by Sharpe (1874: 150-151) shows that much confusion existed in

those days. Sharpe placed the names *manilensis*, *besra*, *gularis*, *affinis* and *stevensoni* all in the synonymy of *A. virgatus*. These names are now known to be applicable to three different species.

Quite apart from this confusion, one would think that Blyth's own identification of *A. nisoides* with *A. gularis* was positive enough, and it has been accepted by many later authors (Hartert 1914: 1161; Vaurie 1965: 165), but others have applied it to a somewhat hypothetical form supposed to be a resident in south-eastern Asia. As far as I have been able to ascertain, the first to advance the last-mentioned point of view was Baker (1928: 164 and 1935: 115), who recognized it as a valid subspecies of *A. gularis* under the name *A. g. nisoides*. As the characters ascribed to this subspecies were apparent only in the male sex (according to Baker), it is not clear how he could be sure that the female holotype of *nisoides* belonged to it and was not a migrant of the nominate race. Only a few months later Robinson (1928: 27-28) expressed similar ideas. It has now become clear that *A. gularis* occurs in south-eastern Asia as a winter visitor only and that the differential characters listed by Baker and Robinson are within the range of individual variation.

Baker treated *A. virgatus* and *A. gularis* as different species, and definitely associated *A. nisoides* with *A. gularis*. The next step was taken by Peters (1931: 223), who united *A. virgatus* and *A. gularis* to one species, which led automatically to the combination *A. virgatus nisoides*. The distribution he gave to this subspecies was much the same as that given by Baker: "Southern China from Fohkien to Burma, the Andamans and the Malay States". In part of this range *A. v. affinis* was also known to occur, but by ascribing to that sub-

species a more westerly distribution, and by assuming migration, he managed to provide *affinis* and *nisoides* with separate breeding ranges. The distribution he recorded for *A. v. affinis* was: "Breeds from the western Himalayas to western China, Yunnan and south to Assam and hills of northern Burma. Winters over the greater part of northern India, southern China (including Hainan and Formosa) and Indo-China". The matter of migration will be discussed in the next section.

Authors dealing specifically with birds of the Malay Peninsula continued to be in doubt about the identity of *A. nisoides*. It is true that Chasen (1935: 72 footnote 2) considered the name more likely to apply to a migratory form than to a resident race. Gibson-Hill (1949: 38) also regarded it as a winter visitor, but as far as I can judge he did not question its validity. Even Medway & Wells (1976: 401-402) felt compelled to discuss the name: "We have not had access to the type of *A. v. nisoides* [*sic*], but Chasen, Gibson-Hill and others have suggested that it was probably a migrant and possibly identical with *A. gularis*. The accuracy of a 19th century localization 'Malacca' is in any case suspect". Note that these authors introduced a new element of doubt: that the localization 'Malacca' is suspect. In general this would be perfectly true, but in this particular case attention should be paid to Blyth's words that the collection to which the type of *A. nisoides* belonged was: "chiefly procured in the vicinity of Malacca", and from the further text it is evident that Blyth at least believed the specimen to have come from near the town of Malacca, an acceptable locality for a migrant *A. gularis*. Whether or not a resident population of *A. virgatus* occurs in the mountains of Malaya, where one would almost expect it on

geographical grounds, is a question that can only be solved in the field. It should by now be evident that the name *nisoides* can never be used for such a population, being clearly a synonym of *A. gularis*. For reasons which will be obvious to the informed, I have ignored Cairns's (1963) breeding record from Selama, Perak.

Even though I was and am perfectly satisfied about the identity of *A. nisoides*, I have nevertheless tried to trace the type specimen, but have been unsuccessful. According to Dr. Mukherjee (*in litt.*, 19.ix.1977) it cannot now be found in the Indian Museum, and as it is not listed by Sclater (1892), the specimen has probably disappeared long ago.

Is *Accipiter virgatus affinis* MIGRATORY?

Apparently Hartert (1910: 211) was the first to definitely mention migration in connection with *A. v. affinis*, in the following words: "*Accipiter affinis* appears to inhabit the Himalayas. It is found also in Formosa and Hainan, but it appears to be a winter visitor on these islands, and probably migrates down from the Himalayas in the cold season". This is the somewhat casual way in which the notion that *A. v. affinis* is migratory entered the literature. Hartert's authority ensured this casual opinion being copied uncritically. It was echoed by Baker (1928: 161): "In winter...is found over the greater part of Northern India", further gained in respectability through Peters (1931: 223), was repeated by Ripley (1961: 47): "wintering to the south of its breeding range" and is still found in a slightly modified version in Ali & Ripley (1968: 248). Vaurie (1965: 165) also claimed *A. v. affinis* to be: "Partly migratory, moving down to the plains of northern India in the winter, and to the Indo-Chinese coun-

tries, Hainan, and southern China; resident in Formosa where it moves down to the plains during the winter". The latest reviser, Wattel (1973: 36) stated: "*A. v. affinis* shifts to lower levels and to the plains of India, Indochina, and southern China in winter. It appears in fair numbers on Hainan (Hartert 1910). The population on Taiwan also descends from the mountains in the winter".

Thus it may be said that the opinion that *A. v. affinis* is migratory is well-established and time-honoured. Nevertheless it is necessary to state that I have been unable to find much evidence to support it.

Even fifty years ago, Swann (1926: 324) noted that birds from Formosa (Taiwan) are larger than birds from the Himalayas and the former have since been recognized as representing a separate subspecies, *A. v. fuscipectus* Mees, 1970. There is no evidence that *A. v. affinis* ever visits the island. Why in Hainan *A. v. affinis* should have been regarded as a winter visitor only is also unclear. The first to record the species from Hainan was J. Whitehead in 1899 (cf. Ogilvie-Grant 1900: 490); his two specimens were both obtained in the second half of May (cf. Mees 1970: 289). Hartert's (1910: 209) specimens were collected in January, March, April and November. Shaw & Hsu (1966: 97) listed specimens taken in May, June and September. Clearly, *A. v. affinis* is a resident in Hainan.

Hartert's ideas are supported to a certain extent by early records from the Indian Plain, although authors who accepted these records considered them proof of occasional wandering, not of migration. Just the same, they merit a full discussion which will be given below.

The specimens I have examined from the western part of the range come from Kashmir,

northern India, Nepal, the extreme north of Bengal (Duars, Jalpaiguri, Darjeeling), the hills of Assam, etc., see specimens listed here and the list of material with dates and localities provided in a previous publication (Mees 1970: table II). There was not a single specimen from the Indian Plain, where according to the authors just quoted *A. v. affinis* would range widely in winter.

The literature consulted provides also little evidence for the occurrence of *A. v. affinis* south of its breeding range. In the light of the confusion between several species that was prevalent in those years, old records from Kutch (Stoliczka 1872: 230), Sambhar Lake (Adam 1873: 368) and Aboo (Hume in Butler 1875: 445) appear questionable. These records were accepted by Blanford (1895: 404-405) and through him have become entrenched in the world literature. Stoliczka's Kutch collection is in the Vienna Museum. At my request Dr. Schifter made a search for *Accipiter* specimens contained in this collection and informed me as follows: "Wir haben zwar Stoliczkas Sammelausbeute aus Kachh erhalten, aber es hat sich darunter kein Exemplar von *Accipiter virgatus* befunden. Ich habe auch in den Eingangsbüchern mit der Originalliste der Sendung nachgesehen und dort sind aus Kachh nur 2 (♂ und ♀) der in Stoliczkas Artikel erwähnten '*Micronisus badius*' verzeichnet, die sich auch in unserer Sammlung befinden (Inv. Nr. 71.213, 71.214)... In seiner Veröffentlichung schreibt Stoliczka bei *A. nisus* and *A. virgatus* allerdings auch nur 'not common'. Offenbar haben daher auch ihm in seiner Sammlung keine Exemplare vorgelegen" (Schifter, *in litt.*, 9.v.1979). In the absence of material to support it, Stoliczka's record should be dismissed. I have not traced the specimens from Sambhar Lake and Aboo. The supposed

occurrence near Lucknow in the Ganges Plain is based on Reid (1881: 6): "It is a cold weather visitor, very locally distributed". To this the same pertains as to the older records just listed, especially as in this case there is no reference to a collected specimen. Jesse (1903: 78) was unable to add anything to Reid's observations. Swinhoe & Barnes (1885: 50) wrote under the name *A. virgatus*: "two specimens were obtained at Mhow in October 1881" and the measurements provided for the male bird: "Length 11.2 inches, wing 6.75, tail 5.1" do not contradict their identification. In order to verify the identification, I have tried to trace the specimens which I expected to be in the British Museum (cf. Sharpe 1906: 495). However, Mr. Galbraith (*in litt.*, 13.x.1978) informed me as follows: "Unfortunately and oddly, we have not got Swinhoe and Barnes' *Accipiter virgatus* from Mhow. Though the History of the Collections implies that the whole of the Mhow collection came to us in 1884, there are no *A. virgatus* among the 332 birds registered, nor any from Mhow in the collection. Evidently the 332 were not all the birds collected by Swinhoe and Barnes. Since the *A. virgatus* did not come to us later, in one of the accumulative private collections, I suppose that Cambridge and Liverpool are the least unlikely places for the *Accipiters* to have ended up". Following this suggestion I wrote to Cambridge and Liverpool, and in the Merseyside County Museum, Liverpool, one of the two specimens was found. It is not the male of which the measurements were published, but an immature bird sexed as a female. I have examined the specimen and found it to be referable to *A. badius* and obviously a male. As I have failed to trace the other specimen, I cannot prove that that also was misidentified, but it is now

very likely that it was, so that the Swinhoe & Barnes record of *A. virgatus* from Mhow can be rejected. It may cause wonder that the mentioned authors misidentified their specimens, as they knew *A. badius*, which they described as a very common bird in Central India. The date and locality of collecting (Mhow, 25.x.1881) and the identification *A. virgatus* appearing on its label provide proof, however, that it actually is one of the birds recorded under that name. Briggs (1931: 399) knew of no other records of *A. virgatus* from Mhow and it is obvious that the species must be removed from the regional list. I have already shown that Baker's (1928: 160) record of *A. virgatus besra* from Mhow is also erroneous.

I am not convinced that the specimens from Lyallpur recorded under the name *A. v. affinis* by Husain & Bhalla (1937: 840) were identified correctly: the habitat, irrigated gardens and fields in an arid country, seems unusual for a forest bird. If the specimens still exist, to which their paper gives no clue, they should be re-examined. It is true that, discussing the habits of *A. v. affinis*, Baker (1928: 162) made the claim that: "In Winter they descend into the plains and at this time keep much less to forest and may be seen in fruit-groves and well-wooded open country", but in this case the alleged shift in habitat in winter only supports my opinion that he confused *A. v. affinis* with *A. badius*.

Swann (1926: 327) quotes Kelham (1881: 365-366) as evidence that *A. v. affinis* is migratory in the Malay Peninsula, but the birds concerned would have been *A. gularis*. Chasen (1935: 72 footnote 2) already observed that some of Swann's remarks given under *affinis* seemed to refer to *gularis*. *A. v. affinis* is unknown from the Malay Peninsula (cf. Medway

& Wells 1976: 406). Medway & Wells did not mention a specimen from Malaya listed as *A. affinis* by Riley: "Dr. W. L. Abbott purchased in Penang an unsexed specimen said to have been shot in the Province of Wellesley". Examination of the specimen (USNM no. 172966) revealed it as an adult female of *A. gularis*.

For Thailand, Hartert's tale of *A. v. affinis* being migratory was eagerly taken up by Robinson (1915: 728). Discussing under the name *A. affinis* two specimens taken on Koh Kut and Koh Rang, islands in the Gulf of Siam, he stated: "There can be little doubt that these two specimens represent the Himalayan *A. affinis* in winter quarters. Specimens precisely agreeing with them except in size have been shot in considerable numbers on small islands in the Straits of Malacca, in company, however, with adult birds with little or no barring on the under surface, that can with difficulty be separated from the true Sundaic *A. virgatus*". The second part of this quotation practically proves that the birds Robinson was discussing were not *A. v. affinis* at all, but immature *A. gularis*. As this record has to my knowledge never been queried in print, I have tried to borrow the specimens. Only one of the two birds could be located in the collections of the former Raffles Museum. It was forwarded for my examination: ♂ im., 21.xii.1914, Koh Rang Island, and as expected proved to be *A. gularis*. Again, Robinson & Kloss (1918: 120-122) claimed *A. v. affinis* to be migratory, but discussing their two specimens of *A. virgatus* from Sumatra (now *A. v. vanbemmeli*), they stated: "both have the 4th and 5th primaries practically equal, whereas the 4th is decidedly the longest in all specimens of *A. v. gularis* and *A. v. affinis*: which we have been able to examine".

As *A. v. vanbemmeli* and *A. v. affinis* agree in having the 4th and 5th primaries subequal, whereas in *A. gularis* the 4th is a little longer than the 5th (see figures), the birds recorded by Robinson & Kloss under the name *A. v. affinis* could not have been *A. virgatus* but were probably the same immature males of *A. gularis* referred to above. Gyldenstolpe's (1920: 746) record of *A. v. affinis* from Thailand is based on these same two specimens and therefore is equally unacceptable.

More recently the status of *A. v. affinis* in Thailand was summarized by Deignan (1963: 17) in the following words: "A permanent resident on the eastern plateau, but generally distributed on migration or in winter from Chiang Rai south to Prachuap Khiri Khan". The Prachuap Khiri Khan record is evidently based on a specimen from Hat Sanuk near Koh Lak collected by Robinson & Kloss (1923: 105). The record looks reliable, but as there is proof that in 1915 and 1918 Robinson confused *A. v. affinis* with *A. gularis*, it seemed desirable to verify it. The bird is preserved in the Zoology Department, University of Singapore, where the collections of the former Raffles Museum are now stored, but Mrs. Yang (in litt.) informed me that regulations forbade its being made available on loan. Although I was invited to come and examine the specimen in Singapore, this was not really convenient for me, but in November 1979 Dr. D. R. Wells had an opportunity to examine the Hat Sanuk specimen: ♀ ad., 14.iv.1919 (Sing. no. 5302), and to confirm its identity as *A. v. affinis*. Dr. Wells also examined material in the Thailand Institute of Scientific and Technological Research, Bangkok, where he found a ♀ im., 19.vi.1971, from Ban Phu Toei, Sai Yok on the Kwai River (TISTR no. 53-1710). The dates of collecting of these two

specimens point to *A. v. affinis* being a resident in south-western Thailand rather than a winter visitor as has been suggested in literature.

TABLE I
SEXUAL DIMORPHISM IN SIZE

	No. of specimens	Wing length (mm)	♂ : ♀ (%)
<i>A. v. virgatus</i>	10 ♂	146.8	
	10 ♀	174.8	84.0
<i>A. v. abdulalii</i>	2 ♂	146.5	
	4 ♀	183.3	80.0
<i>A. v. besra</i>	8 ♂	153.6	
	7 ♀	185.4	82.8
<i>A. v. affinis</i>	27 ♂	165.1	
	33 ♀	199.8	82.7
<i>A. v. fuscipectus</i>	12 ♂	172.4	
	9 ♀	207.8	83.0
<i>A. g. gularis</i>	10 ♂	165.5	
	10 ♀	188.5	87.8
<i>A. g. ivasakii</i>	♂	157	
	♀	181	86.7
<i>A. b. badius</i>	3 ♂	176.7	
	2 ♀	195.5	90.4
<i>A. b. dussumieri</i>	7 ♂	178.3	
	2 ♀	201.0	88.7
<i>A. b. poliopsis</i>	3 ♂	194.3	
	5 ♀	209.8	92.6
<i>A. soloensis</i>	10 ♂	189.0	
	11 ♀	194.2	97.3

Another record that would be indicative of migration is one from Bangkok (Riley 1938: 47). I have examined this bird (USNM no. 306735) and found it to be a perfectly normal adult female of *A. gularis*. Both this and the Wellesley specimens mentioned above bore already the correct identification pencilled on their labels, probably by Deignan. Perhaps this was done after he published his list, or otherwise he has failed to draw the logical

consequences of these re-identifications, which are, of course, that in Thailand, as in India, *A. v. affinis* is sedentary and does rarely occur far outside its breeding range.

The locality Nikhe, Thailand, from where Junge & Kooiman (1951: 7) recorded a sparrow-hawk as *A. v. affinis* ♀ im., is also rather far south for this species. A re-examination of the specimen (RMNH no. 12585) revealed that actually it is an immature *A. badius poliopsis*. On the collector's label the bird had been marked as a male (without query), but as the measurements (wing 201, tail 149, column 14, tarsus 54 mm) were much too large for a male of *A. v. affinis*, Junge changed the sex to female: "♂? [=♀ im.]". It should be noted that in this small collection from the Burma Railway there is nowhere else evidence of mis-sexing by the collectors, who were experienced ornithologists. The identification made by Junge was uncritically accepted by me when I drew up a list of material examined of *A. v. affinis* (cf. Mees 1970: 289), as the measurements fitted a female of that subspecies very well (wing 199, tail 149, tarsus 62½, bill from cere 13½ mm). I have once again measured the bird and I now find: wing 200, tail 150, tarsus 52, culmen from cere 13¾, middle toe without nail 32, wing tip 59 mm, primary 2>6 (against 2<6 or at most 2=6 in *A. v. affinis*). The legs of this specimen have been fixed in a stretched position, making it difficult to find the joint between tibiotarsus and tarsometatarsus, and the great length of the latter (agreeing with *A. v. affinis* but not with *A. b. poliopsis*) measured previously, was caused by my having included the distal end of the tibiotarsus. The measurements are entirely right for a male of *A. b. poliopsis*, as sexed by the collectors.

In Indo-China, Hartert has also had influ-

SPARROW HAWKS OF THE ANDAMAN ISLANDS

TABLE II
INDIVIDUAL MEASUREMENTS

Sex	Wing	Tail	Tarsus	Bill from cere	Middle toe	Wing tip	Wing tip %	Tail: Wing %	Museum and reg. no.
A. v. virgatus									
10 ♂ ad.	141-152	104-112	45-49	10½-12	27-30	32-36	23.4	73.9	RMNH
10 ♀ ad.	170-179	120-134	50½-56	12½-14¼	31-36	37-44	23.5	73.3	RMNH
A. virgatus abdulalii									
♂	148	103	48	—	28	39	26.3	70.0	BNHS 21897
♂ juv.	145	103	46	12½	29	40	27.6	71.0	BM 85.8.19.687
♀	185	138	55	15½	35½	52	28.1	74.6	BNHS 21896
♀	181	129	54½	15½	35	51½	28.5	71.3	BNHS 23111
♀	183	137	54	15	34½	50	27.3	74.9	BM 85.8.19.690
♀ juv.	184	138	56	15	37	51	27.2	75.0	BM 85.8.19.689
A. v. besra									
♂	152	110	49	11	28½	35	23.0	72.4	BM 1956.44.8
♂	150	107	46	11½	—	38	25.3	71.3	BM 1959.19.1
♂	158	120	47½	10½	27	39	24.7	75.9	BM 1956.44.7
♂	158	120	47½	10½	28	38½	24.4	75.9	BM 1955.6.N.20.2803
♂	155	119	50	10½	29	39	25.2	76.8	BM 77.5.24.17
♂	154	115	48	11	27	39	25.3	74.7	BM 1916.9.20.524
♂	152	115	52	10	27	37½	24.7	75.7	BM 1955.6.N.20.2802
♂	150	112	48½	10½	27	36	24.0	74.7	BM 85.4.10.1
♀	181	141	57	13	35	41	22.6	77.9	BM Gurney 2795
♀	180	140	55	13½	34½	43	23.3	77.8	BM 1949 Whl. 1-169
♀ im.	189	144	56	14	35	45	23.8	76.2	BM 87.11.1.242
♀ im.	181	137	54	13	35	44	24.3	75.7	BM 1949 Whl. 1-168
♀ im.	184	143	55½	13½	34½	49	26.6	77.7	BNHS 20773
♀	190	143	55	—	35	44	23.2	75.3	BNHS 20734
♀	193	145	56	12½	35½	50	25.9	75.0	BNHS 23911
A. virgatus affinis									
♂	171	126	54	11½	30½	42	24.6	73.7	BM 77.2.20.6
♂	168	131	52	10½	31	42	25.0	78.0	BM 1937.1.17.85
♂ im.	160	125	49	11	28	43	26.9	78.1	BM 76.10.20.29
♂ juv.	164	118	52½	11	28	41	25.0	—	BM 1938.7.15.121
♂	164	123	54	11	30	42	25.6	75.0	RMNH cat. 1
♀	204	155	61	14	39	50½	24.8	76.0	BM 1948.80.3652
♀	199	154	61	13½	38	48	24.1	77.4	BM 1949 Whl. 1-161
♀	197	151	59	13½	38½	46	23.4	76.6	BM 1921.7.12.31
♀	205	158	64	13	35½	50½	24.6	77.1	BM 85.8.19.684
♀	200	162	63	14½	37½	49	24.5	81.0	BM 85.8.19.681
♀ im.	197	156	58½	13	35½	52	26.4	79.2	BM 1938.12.13.99
♀ im.	198	149	59	14	36	50	25.3	75.3	BM 97.12.10.1749
♀ im.	194	147	57	13	35	50	25.8	75.8	BM 1949 Whl. 1-170

A. g. gularis

10 ♂	160-169	111-117	46½-51	10-11¼	26-29	49-56	30.9	68.2	RMNH
10 ♀	183-197	120-134	49-54½	12-13½	29½-35	55-66	31.8	68.2	RMNH
♂	170	118	46½	11	27	53	31.2	69.4	BNHS 23926
♂ im.	158+	115	46	10	27½	—	—	—	BNHS 21895
♀ im.	190	134	49	12½	31	57	30.0	70.5	BM 75.6.24.15
♀	192	132	52	12¼	32	58	30.2	68.8	BNHS 22581
♀ im.	184	128	50	12½	31	60	32.6	69.6	BNHS 23700
♀	187	124	49	11½	30	58½	31.3	66.3	USNM 172966
♀	191	129	52	12½	31½	59	30.9	67.5	USNM 306735

A. g. iwaskii

♂	157	112½	50	11¼	27	41	26.1	71.7	AMNH 533881
♀	181	132	53	—	31½	46½	25.7	72.9	AMNH 533880

A. badius badius

♂	175	128	48	11	27	57	32.6	73.1	RMNH 5037
♂	175	126	46½	12½	27½	55	31.4	72.0	RMNH 5088
♂	180	131	44	12¼	28½	58	32.2	72.8	RMNH 5155
♀	197	143	51	14¼	31	58	29.4	72.6	RMNH 4938
♀	194	144	51	14½	32½	61	31.4	74.2	RMNH 4953

A. badius dussumieri

♂ im.	184	139	50½	13	28	57	31.0	75.5	MCM
♂ im.	184	143	48	12¼	25	63	34.2	77.7	RMNH cat. 4
♂ im.	172	129	45	12¼	26	53	31.0	75.0	RMNH 80201
♂	175	127	45	12	26	50	28.6	72.6	RMNH cat. 6
♂	174	125	50	11½	26	53	30.5	71.8	RMNH cat. 5
♂	184	130	47½	12½	28	53½	29.1	70.7	RMNH cat. 1
♂ im.	175	136	47	12	27	51½	29.4	77.7	BM 1938 7.15.112
♀	198	148	54	14	29	62½	31.6	74.7	RMNH cat. 2
♀ im.	204	160	56	16	30	60	29.4	78.4	RMNH cat. 3

A. badius poliopsis

♂	189	141	51	13	28	54	28.5	74.6	RMNH 12584
♂ im.	200	150	52	13¼	32	59	29.5	75.0	RMNH 12585
♂	194	139	51	14	26	58½	30.2	71.6	RMNH cat. 1*
♀	205	154	56	15	31	58	28.3	75.1	RMNH 12583
♀	211	160	56	15	30	59	28.0	75.8	RMNH cat. 2*
♀	214	168	56	15½	32½	59	27.6	78.5	RMNH cat. 1
♀	209	158	54	14	31	65	31.6	75.2	RMNH cat. 2
♀ im.	210	154	57	14¼	30½	63	30.0	73.3	RMNH cat. 3

A. soloensis

10 ♂	183-194	119-128	41½-44	11½-13½	23-26	68-72	37.2	65.6	RMNH
11 ♀	188-197	121-137	42-49	11½-14	23-26¼	68-75	36.7	65.6	RMNH

ence as will be clear from this quotation on the distribution of *A. v. affinis*: "Niche dans l'Himalaya jusqu'au Yunnan. En hiver, descend dans l'Inde et l'Indochine. Il est possible qu'il soit sédentaire sur les montagnes du nord du Tonkin et du Laos" (Delacour & Jabouille 1931: 111). Specimens I have examined from Djiring, 18.iii.1927; Blao, 17.ii.1930; Langbian Peaks, vi.1939; Dalat, 20.vi.1961, and Fyan, 1.viii.1961 (cf. Mees 1970: table II), localities in southern Viet Nam between 11°30' and 12°N, provide proof that even in the most southerly mountain regions of Viet Nam the species is a permanent resident. In addition there are records from Pleiku in May (David-Beaulieu 1939: 29), Thateng, southern Laos, in December (Engelbach 1932: 458), Tranninh, Laos, in July and August (David-Beaulieu 1944: 75), etc. Clearly *A. v. affinis* ranges throughout the interior of Indo-China, and is sedentary.

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